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ABSTRACT

The purpose of the study reported in this five-chapter document was to develop a model of differentiated teaching personnel based on student learning needs and to test the rationale for developing that model. The resultant semantic model (presented and illustrated in chapter 4 of the report) is designed to provide for effective interaction between teaching style and student learning while at the same time providing the kind of growth and advancement opportunities which will enable and encourage teaching personnel to remain in the profession. The model differentiates secondary school staffing responsibilities according to the following: (1) general phases of a total school program (instruction, curriculum, facilities, testing, teacher evaluation, and responsibilities for students); (2) types or modes of learning-management activities under each phase (for example, large-group, small-group, or individually directed learning under the instructional phase); and (3) levels of responsibility in each activity (major, subordinate, or planning). Four submodels (developed to define teaching responsibilities of each of four kinds of teachers--assistant, associate, senior, and master teacher) are presented to illustrate the applications of the model to problems of staff utilization. Procedures by which the model rationale was validated are described in chapter 5. (Author/ES)

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DIFFERENTIATED TEACHING PERSONNEL:
A MODEL FOR THE SECONDARY SCHOOL

by

Donald K. Sharpes

A Dissertation Presented in Partial Fulfillment
of the Requirements for the Degree
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CHAPTER I

DIFFERENTIATING STAFF

The present educational system is characterized by the inability of professional teachers to express themselves in different kinds of teaching roles. There is an absence of a systematic institutional process for change, a lack of carefully prescribed job descriptions and role differentiations. There is, in short, a lack of advancement opportunities for teaching personnel.

One of the basic goals, consequently, which should eliminate the deficiencies of the system is that of developing new staff models which structure and differentiate teaching patterns more realistically. The major emphasis has to be on a comprehensive program in which teaching personnel can develop their human potential and professional competencies in a context which fosters such growth and development.

I. PURPOSE

Statement of Purpose

The purpose of this study, then, was to build such a model of differentiated teaching personnel and to test the rationale for its development among selected educators. There were, therefore, two related aspects of this study: (1) building the model, and (2) testing the basis for building the model.

How a model is built (the nature of a model will be explained later in this Chapter) is fundamental to an understanding of what a model is. This study proceeded under the assumption that a model had to be preparatory to implementation. As a result, this staffing model was a verbal description, a semantic model of the kinds of activities and consideration necessary to implementing differentiated teaching responsibilities.[1]

Part I

The procedures included differentiating secondary school staffing responsibilities of the following phases of a hypothetical school's program: instruction, curriculum, facilities, testing, teacher evaluation, and responsibilities for students. Then, valuational assignments were made for each activity within these phases--such as small group under the instructional phase--to three responsibilitiy levels: major, subordinate, and planning. (See Submodel 3, Chapter III, page 60.) Submodels for four different kinds of teachers, each differing in the nature of his teaching responsibilities were deduced from this master scheme. Two other submodels, Assumptions and Definitions, completed the total model, which was an explanation of how these differing teaching responsibilities might be carried out in practice.

Part 2

The second part of this study included testing the rationale for developing the model. A selected panel (selection procedures are described in Chapter III) reacted to the submodels, but only to the pictorial representations of the teacher submodels and not the verbal descriptions. Securing their reaction was an attempt to establish validity for the rationale for building the model. The rationale for developing this model of differentiated teaching staff was that student learning needs (defined below), as represented by the first three submodels (Assumptions, Definitions, and Illustration of the Variety of Activities in the Management of Learning), must be the basis for a secondary school teaching staff.

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[1] Cf. Dwight Allen, "A Differentiated Teaching Staff" (unpublished monograph, School of Education, Stanford University, Palo Alto, California, 1966). "First of all, it is difficult to identify differentiated staff responsibilities. We have not thought about the use of staff in such a manner, and it would be a major undertaking."

Measuring significance for this rationale was a ranking instrument which allowed the panel to rank submodels using their own judgmental evaluation as criteria. Statistical significance indicated concurrence with the rationale.

Panel members were asked to rank the submodels in order of priority, that is, to place number one after the submodel they thought most important to an understanding of the staff model, and so on. This ranking instrument, once again, was an attempt to substantiate the rationale for building the model.

Hypotheses

It was hypothesized that this survey sample of judges would agree that:

1. there was priority in the establishment of the submodels of the design;

2. priority was in the direction of the management of learning model, the rationale, rather than individual teacher models; and
3. among individual teacher models that of the Master teacher was of highest priority.

The total model was developed from the Management of Learning submodel. The hypotheses were substantiated; therefore, the rationale for building the model was also substantiated, and the methodology and the investigator vindicated.

It was appropriate at this point to regard the need for an organizational design, the assumptions in the designing of a human organizational scheme, and, most importantly, the need for a differentiated teaching staff.

Definitions

The two key definitions of this study are *model* and *priority*.

Model. Kaplan referred to a model as the "embodiment of a structural analogy."[2] Regardless of the words used to describe the analogy of the model as a tool in behavioral science and education, it was some kind of device by which a system can be shown to be consistent. It was not necessarily an architectural design. It was not a blueprint of what was to be done. It was a suggested way of operating. It was, in the language of logic, a form by which if things agree with one another in one or more respects, they will likely agree in other respects. It was the structure of semantic symbols that attempts to bring into order the identity of things that seem dissimilar.

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[2] Abraham Kaplan, *The Conduct of Inquiry* (San Francisco: Chandler Publishing Co., 1964), pp. 258-93.

Kaplan cited four kinds of models: (1) the physical model, such as the computer model or simulation or architectural design; (2) the semantic model, "the symbolic or conceptual analogue"; (3) the formal model, the structure of a theory; and (4) the interpretive model, the concrete instance of abstract form.

This study used what Kaplan referred to as a "semantic model" or a "conceptual analogue" because it appeared to suit best the purposes of symbolizing a personnel structure and further provided a prototype for implementation.

Belth's comments on the analogue model were equally appropriate.

> Analogue models . . . represent not so much the features of an event as the structure of the relationships within that event. . . . Their form permits the development of hypotheses about the event being examined.[3]

The semantic model of this study included schematic diagrams but the diagrams themselves are not the model. There were only attempts to make pictorial what are true and meaningful within the context of the language of the model.[4]

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[3] Marc Belth, Education as a Discipline (Boston: Allyn & Bacon, 1965), p. 103.

Priority. Priority was defined as the degree to which the panel thought a submodel(s) should have ranking precedence over another.[5] The priority concept was an attempt to validate the underlying rationale for the development of the model.

Other definitions appropriate to this study included the following:

Submodel--that which illustrated the structure of relationships in a parent-model.

Responsibility--a task or group of tasks specifically chargeable to a teacher.

Differentiation--a way of distinguishing specific differences in teachers' responsibility. A plan for meeting individual differences in teachers.

Management of Learning--a plan of individual teacher differentiation for meeting the changes of behavior in students.

Teaching Style--the behavior of a teacher in the presence of students.

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[4] Cattell has noted recently that the model, because of its variety, lends itself to testing. "The advantage of a model is that it is precise, and clear in its testing implications. Only in some form of model can certain aspects of a theory be sincerely tested." Raymond B. Cattell (ed.), Handbook of Multivariate Experimental Psychology (Chicago: Rand McNally & Co., 1966), p. 42.

[5] Kendall calls priority, when used with ranks as this study will, a "community of preference." Maurice G. Kendall, Rank Correlation Methods (London: Charles Griffin & Co., Ltd., 1948), p. 84.

Student Learning Needs--The individual student differences to be accommodated by individual teacher differences.

Teacher--"a person employed in an official capacity for the purpose of guiding and directing the learning experience of pupils. . . ."[6]

Teaching--"narrowly, the act of instructing . . . broadly, the act of providing activities, materials, and guidance that facilitate learning. . . ."[7]

Learning--"change in response or behavior. . . ."[8]

II. NEED FOR ORGANIZATIONAL DESIGN

Central to this investigation was the need for an organizational design of the teaching staff. The lack of an organizational design was neither logical nor efficient. It was conceivable that a teacher could be appointed to a salaried position without a clear idea of just what part his role of an English I teacher, for example, was supposed to play in the general learning process of the students under his tutelage. It was quite possible that he could teach them something called English I and feel justifiably satisfied when they had mastered moderately the several units contained in the textbook. It seemed illogical and

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[6] Carter V. Good (ed.), Dictionary of Education (New York: McGraw-Hill, 1959), p. 550.

[7] Ibid., p. 552.

[8] Ibid., p. 313.

inefficient for a secondary school to attempt to isolate all of its students into compartmentalized learning units, isolates of segmented learning, without placing a competent and experienced teacher at their disposal to help them integrate their knowledge of discrete subjects.

Thus, a weakness in the current structure of a secondary school teaching staff was the inefficiency of teaching integration. There was no rationale or design of differentiated teaching responsibilities. The differentiation was into subjects and teachers of subjects. The assumptions were that each teacher was equally competent in the technical skills of teaching as well as in subject matter. This assumption had to be true since there was an equal distribution of class "load," that is, number of students for each teacher. Moreover, because there were no vertical levels of responsibility for the classroom teacher, there was no incentive to improve instructional techniques. It appeared expedient to discover a basis for differentiating teachers according to student needs.

III. ASSUMPTIONS

The designing of a human organization had to be prefaced with several assumptions. First, individuals would never conform in every respect to a conceptual scheme from the drawing board. It was the creativity and ingenuity of interpretation which an individual brings to his task that really defined the position he was assigned to. Consequently, in a real sense, individuals defined the role assigned them according to their perception of its responsibilities.

Second, the need for organization change was prompted in part because of the current inefficiency of the structure. The situation was comparable to that of the medical profession at the turn of the century when general practitioners performed their services without technical assistance, nurses, and other skilled medical personnel.

Third, the teaching structure of the educational system had never modified itself to adapt to accelerated growth both laterally and vertically. The adaptation of the managerial hierarchy, the administrative structure of the secondary school, on the other hand, had kept some pace with growth. The analogy here was that education is not providing for its own normal growth and development as an adaptive organism.

IV. NEED FOR A DIFFERENTIATED TEACHING STAFF

The Research

The need for a differentiated teaching and instructional staff was voiced in 1959 by J. Lloyd Trump and his associates.[9] The proposal was made then that the secondary school be organized around three kinds of activities, large and small group instruction, and individual study. It was also proposed that the instructional staff be reorganized to include the following kinds of personnel: teacher specialists and general teachers--both considered professionals, instructional assistants, clerks, general aides, community consultants, and staff specialists. "Thus, teachers' individual differences in abilities, interest, physical energy, and available time will be recognized in ways that are impossible today when uniformity characterizes staff assignments."[10]

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[9] J. Lloyd Trump (ed.), Images of the Future, Commission on the Experimental Study of the Utilization of the Staff in the Secondary School, National Association of the Secondary School Principals (Washington: National Education Association, 1959).

Bush and Allen somewhat expanded this concept of staff utilization in 1964.[11] They contended that:

> The implementation of the new design for high school education requires changes in the present concept of high school staff. Three principal categories of staff are needed: professional, supporting, and resource personnel.[12]

Bush and Allen's differentiation of the professional staff was into senior teacher, staff teacher, first-year teacher, and intern teacher. However, their differentiation of the supporting staff into teaching assistants, technical assistants, clerical assistants, closely paralleled the resource staff proposed by Trump and his associates.

The enormity of reappraising the total teacher structure of the secondary school confronted the educator with the formidable ordeal of re-thinking precisely what organizational needs meet the learning needs of students. When research demonstrated that control rather than cognition, or some other more positive attribute to be transmitted, was the "most frequent and pervasive" function teachers perform, then the necessity--not just of finding new ways of evaluating teachers, but of re-allocating their usefulness--became paramount.[13]

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[10] _Ibid._, p. 16.

[11] Robert N. Bush and Dwight W. Allen, _A New Design for High School Education_ (New York: McGraw-Hill and Company, 1964).

[12] _Ibid._, p. 40.

Indeed, Waetjen concluded that the contemporary thread of evaluating teacher effectiveness says a great deal about the learner. "Another recurring theme that I see is that in all of these researchers [Hughes, Bellack, Flanders, Perkins] we find the learner cast in a passive role."[14] His sampling of research draws a pall over optimistic evaluators of teacher effectiveness.

> The picture of teaching that has been presented from these researches is vastly different from that picture of teaching which is expressed, hoped for, desired, or striven for in our curriculum guides. There is a great difference between what and how we profess to be teaching, and what is actually going on in classrooms.[15]

Recent models of staff differentiation did not make the assumption that teachers ought to be organized according to how students best achieve.[16] They all uniformly proceeded to develop a basis for differentiation by cataloging what teachers did, by projecting indiscriminate salary schedules founded only on the need to pay for special competencies, or by selecting better teachers on what kinds of instruction they best performed. If the label "staff utilization" means something more than a bureaucratic compartmentalizing of who teaches what, in which room, and at what time, then how teachers can be most effective must be predetermined by which students need what, in what place, and at what time.

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[13] Walter B. Waetjen, "Recent Analyses of Teaching," _The Bulletin of the National Association of Secondary School Principals_, L (December, 1966), 17-29.

[14] _Ibid._, p. 29.

[15] _Ibid._, p. 28.

[16] See Chapter II, Section II, for examples of other models.

Four Needs

The need for a differentiated teaching staff stemmed from needs which were prior in origin. This study explored four of those needs. They were: (1) the heavy teacher turnover expressed in the numbers of teaching personnel leaving the profession; (2) the lack of promotional opportunities; (3) the need for model designs and the planning of personnel decisions; and (4) the need for information about the effect of particular teaching styles on given student populations. The teacher turnover problem and factors affecting teacher advancement opportunities will be examined more fully in Chapter II. But the need for model designs was imperative in planning the future of the teaching profession. Furthermore, the model designs had to be built on how students learn, the fourth need.

Model Designs

The need for model designs as preludes to planning was expressed by several authors. Belth's conception of the making of models applied to the study of education in general, but was equally pertinent to the development of human resources.

> The study of education is the study of the way in which models for inquiry are constructed, used, altered and reconstructed. It is, further, a study of the types of models available at any given moment, and the conditions which make the model either employable or in need of rebuilding. . . .[17]

Kaplan also stated the need for models.

> Models have this merit, that they do not allow us to comfort ourselves with the motion that we are following up an "idea" when we are only moving from one observation to the next in the hope that something will turn up.[18]

Davis, too, pointed out the need. "Models, schemata, and projection routines provide the planner with methods of fashioning some images of future possibilities in human resource development."[19]

Learning and Teaching

Yet, if we did not know something about the interaction between teaching style and student learning, we might be flailing in a windstorm. The assumption was that a student's learning was a function of the kind of teaching he was exposed to. Thus, the extent to which a student learned was a reflection of the appropriateness of the approach used to teach him and therefore of who _taught_ him.

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[17] Belth, _op. cit._, p. 103. But for more complete developments see Warren Brown, "Model Building and Organizations," _Academy of Management Journal_, X (June, 1967), 167-78; and also William T. Morris, "On the Art of Modeling," _Management Science_, XIII (August, 1967), 707-17.

[18] Kaplan, _op. cit._, p. 268.

[19] Russell G. Davis, _Planning Human Resource Development_ (Chicago: Rand McNally, 1966), p. 237.

Goldberg made this clear:

> The . . . assumption . . . rejects the notion of the universally "good" teacher, equally able to adapt his style to varying pupil populations, and substitutes a conception of a variety of "good" teachers, differentially suited (by temperament and training) to teaching differing groups of students.[20]

Torrance, in a study of mathematics teachers, found results that suggested that the conventional qualifications of teachers did not differentiate teacher effectiveness, and that teacher effectiveness positively effected student attitudes towards teachers.[21]

Goldberg's conclusion of research (of Heil, Ryans, Thelen, and Flanders) summarized the expression of the need for differentiating teachers to improve students' learning.

> A significant implication of the studies of teacher characteristics, teaching process, and teachable groups is the recognition that variations in pupil attainment in the classroom are related to variations in teacher performance, and that a particular teacher affects different pupils differently.[22]

Gage was just as explicit on this point, and argued for theories of teaching to complement those of learning.

> The kind of theory of teaching with which we are concerned places the behavior of teachers in the position of "independent variables" as a function of which the learning of pupils is to

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[20] Miriam Goldberg, "Adapting Teacher Style to Pupil Differences: Teachers for Disadvantaged Children," Merrill-Palmer Quarterly, X (April, 1964), 161-78.

[21] Paul E. Torrance, "Characteristics of Mathematics Teachers that Affect Students' Learning" (unpublished report, University of Minnesota, Minneapolis, Minnesota, September, 1966).

[22] Goldberg, op. cit., p. 166.

> be explained. That is, theories of teaching should be concerned with explaining, predicting and controlling the ways in which teacher behavior affects the learning of pupils.[23]

Waetjen's conclusion, too, from a finding of Flanders' studies of teacher influence by means of interaction analyses, was a testimony to flexibility in teaching style.

> Students who achieved most and had significantly high scores on aptitude tests were in classes exposed to flexible patterns of teaching response. . . . The greater the teacher's repertoire of teaching styles, the more likely there was to be greater student achievement. . . .[24]

V. SUMMARY

Staff utilization needs were not adequately being met according to recent research. There was a need for alternative differentiated staff designs because: (1) teachers were leaving the profession; (2) teachers did not have chances for promotion within the teaching profession; (3) there were not enough models preceding the planning of human organizations; and lastly, (4) student learning needs were influenced by variations in teaching styles.

The purpose of this study was the development of a model of differentiated teaching personnel based on student learning needs and variations in teaching responsibilities, and the testing of the rationale for developing that model.

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[23] N. L. Gage, "Theories of Teaching," Theories of Learning and Instruction, Ernest R. Hilgard, editor (Chicago: The University of Chicago Press, 1964), pp. 268-85.

[24] Waetjen, *op*. *cit*., p. 26.

CHAPTER II

REVIEW OF RELATED LITERATURE

It is not enough for a school or district to hire more teachers based on the anachronism of a fixed student-teacher ratio or any other quantitative measure, such as the reduction of other teachers' loads. Nor is it enough to hire more specialists to accommodate the needs which arise because of large student populations. Research on teacher turnover for this decade, as summarized in this chapter, indicated a strong yet consistent trend that qualified teachers of all backgrounds, including vocational agriculture teachers and teachers of the culturally disadvantaged, were leaving the teaching profession at an alarming rate. Two principal reasons seemed to cause this exodus: inadequate salaries and lack of advancement opportunities.

The research in the first section of this chapter was an attempt to emphasize this trend and to highlight it as a current problem in secondary school staffing procedures that differentiated staffing could obviate. Examples of proposed differentiated staffing models constituted the second section of this chapter. The purpose of the research review on teacher turnover was to call attention to the rationale for developing models of differentiated staff and the premises upon which they were built.

It was presumed that differentiation of teachers was a visible means of compensating for the loss of teachers and a way of reconciling differences in teacher talents with differences in student learning needs. With the research of teacher turnover, then, as a base, the second section of this chapter summarized alternate staffing patterns. These served as contrasts to the model presented in Chapter IV.

The third section of this chapter attempted to relate the research on teaching style and student learning needs to the proposal.

I. RESEARCH ON TEACHER TURNOVER

I wonder if there really aren't more basic questions

The Rationale

The manpower dilemma in teacher turnover has reached crisis proportions. The decisions of administrators and supervisors are unintentionally perpetrating a personnel structure inconsistent with the requirements of maximum student learning and individualized instruction. Failure to capitalize on teacher talents and on the basic human drive to advance professionally in the teaching profession is causing qualified personnel to abandon the closet confinement of the classroom for better pay and more promising rewards elsewhere. It would not be a cautious prediction that maintained that unless the system were overhauled to stem the current manpower drain, that education would soon lose to business and industry its most valuable resources. The problem of teacher turnover and attrition is cause for widespread alarm.

Research indicated this same concern.

> More than half of the young people who receive teaching certificates in June have "dropped out" of the profession two years later. Fewer than half of all first-year teachers plan to be teaching at the end of five years. One third of all beginning teachers do not return to the same school a second year.[1]

A more thorough review of the literature on teacher turnover indicated the consistency of the pattern of those who leave teaching. The purpose of this literature review was to demonstrate the need for differentiating teaching responsibilities.

Research Trends

Consistent throughout the literature was that salary modification was indispensable to arrest the heavy traffic of teachers leaving the profession. Financial difficulties or economic strain of some kind was the most frequent cause of concern voiced by teachers.[2] Although the research was overwhelming that teachers were leaving the profession in large numbers, poor salary compensation was only one among the categories of dissatisfaction. Equally prominent were lack of opportunities for advancement, such intangibles as inadequate human relations factors, routine clerical chores, discipline problems in the classroom, inadequate preparation in subject fields, unfair evaluation, and pressure from the community.[3]

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[1] Mary Keohane, "Supportive Supervision," Illinois Education, V (November, 1966), 109.

[2] Robert H. Nelson and Michael L. Thompson, "Why Teachers Quit," Education Digest, XXIX (September, 1963), 12.

Wolf and Wolf completed intensive studies which revealed a rather consistent teacher dropout pattern.[4] One of the conclusions of their study was that the teacher dropout problem should be given highest priority by educators. Because the present structure was not sufficient to hold professional personnel, their principal recommendation was that teachers' salaries should be raised to a level par with other professions.

Gordon found that the teacher turnover rate was largely influenced by the size of the district.[5] The National Education Association's 1961 report showed the median termination rate was only 7.3 per cent for districts over 100,000 or more average daily attendance.

Another significant finding was that 51 per cent of first-year teachers did not expect to be teaching five years later, even though at the time they were generally satisfied with their work.[6] Less comprehensive studies manifested the same consistent trend.[7]

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[3] Ibid., pp. 12-15; cf. also Dr. Rufus C. Browning, "How to Tackle the Problems of Teacher Turnover," School Management, VII (June, 1963), 81.

[4] Willavene Wolf and William C. Wolf, Jr., "Teacher Dropouts: Still a Dilemma," School and Society, XCII (April, 1964), 193.

[5] For a comprehensive survey of research on teacher turnover until 1963 see Garford G. Gordon, "Conditions of Employment and Service in Elementary and Secondary Schools: Employment, Assignment, Turnover," Review of Educational Research, XXXIII (October, 1963), 385-97.

[6] Ibid., p. 387.

Special education teachers. Heller's research on teachers' decisions to leave special education indicated that the retention of qualified personnel is the major hurdle of special education programs.[8] "Unless special education is able to retain the qualified personnel now teaching in special classes, it is not likely that the problem of teacher supply will be alleviated."[9] He also found that economic consideration such as salary and lack of advancement opportunities figured prominently.

Teachers of the culturally disadvantaged. Groff surveyed 294 teachers in sixteen elementary schools in a California metropolitan city and found that the annual turnover rate is disturbingly high.[10]

> Thirty-seven per cent of the total number of believed causes for teacher turnover centered around weakness in the administrators or deficiencies in the organizational structure of the school.[11]

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[7] Among these are studies by W. C. Bruce, "Teacher Turnover," an editorial in The American School Board Journal, CXLIX (November, 1964), 29; and also William Bartram, "Why Did He Quit Teaching," Education Digest, XXVI (May, 1961), 32-33.

[8] Harold Heller, "Relationship Between Certain Background Characteristics of Special Education Teachers and Their Decisions to Leave Special Education," Teachers College Journal, XXXVII (March, 1966), 187-91.

[9] Ibid.

[10] Patrick J. Groff, "Teaching the CD Child: Teacher Turnover," California Journal of Educational Research, XVIII (March, 1966), 91-95.

[11] Ibid., p. 95.

One of the most significant conclusions of this study was that many of the reasons given by teachers of the culturally disadvantaged for quitting the profession are similar to reasons given by teachers of every discipline for leaving.

Vocational agriculture teachers. Froehlich and Bundy found that among vocational agriculture teachers two of the chief reasons for dissatisfaction and eventual quitting of teaching were lack of advancement opportunity and salary.[12] These same factors were reported to have been influential in the decision of a vocational agriculture teacher to leave the profession after teaching more than five years. But the startling finding was that the very best vocational agriculture teachers were leaving. "The graduates who received the highest quality point averages were inclined to leave the teaching profession first."[13]

Thompson found that only 9 teachers remained in the profession after six years from an initial group of 71. He found further that among 14 vocational agriculture teachers nearly 20 per cent had left after only one year.[14]

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[12] Loren H. Froehlich and Clarence C. Bundy, "Why Qualified Vocational Agriculture Teachers Don't Teach," _Agriculture Educational Magazine_, XXXIX (December, 1966), 135.

[13] _Ibid_.

[14] John F. Thompson, "A Look at Some Who Quit Teaching," _The Agriculture Education Magazine_, XXXIX (January, 1967), 156-159.

California Teachers

California, the most lucrative state for teacher salaries, conducted a survey of 17,000 who left teaching between 1950 and 1959.[15] The report disclosed that the majority, 57 per cent, resigned their positions for reasons of maternity, marriage, or movement out of state. But approximately 45 per cent of the men who left during the last decade in California left principally for two reasons: inadequate salaries and job dissatisfaction. This same finding was confirmed by more recent research by Gourley and Pourchot.[16]

Lurie studied faculty turnover in higher education. Even though his audience is administrative, his argument that unless the teaching resources are utilized more economically, quality education in the future will suffer was equally applicable to the secondary staffing problem.[17]

Salary Structure

Of special interest for the purposes of this study, however, was the recommendation that salaries should somehow be structured differently. Gourley and Pourchot in their research on teacher dropouts offer this suggestion, "One area deserves added emphasis, however; _there should be more difference between the highest attainable salaries and the starting salary_. . . ."[18] (Emphasis added.)

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[15] This survey is reported in an editorial, "Report on Why Teachers Quit Teaching," Chicago Schools Journal, XLV (October, 1963), 35.

[16] Robert H. Gourley and Leonard L. Pourchot, "Teacher Dropouts," Illinois Education, LIII (February, 1965), 259-62.

[17] Melvin Lurie, "Toward a Survey of Faculty-Turnover Rates: Increasing the Effectiveness of Manpower Management in Higher Education," Journal of Higher Education, XXXVII (October, 1966), 389-95.

The realization of the enormous disparity between different professional groups and the teaching profession had never been in doubt. Nor had the realization that not all teachers should be paid in equal proportion. But the blunt truth seemed to be that there was only token attempt to modify certain salary schedules and structures to adapt to the exigencies of heavy teacher turnover, especially among men.

Thus, a real key to a modified salary schedule that was realistic, equitable, and would help alleviate the flow of manpower out of the profession appeared to be one that was structured with opportunities for challenging advancement _within the teaching profession_.

Concomitant with the notion that salaries should be structured differently, therefore, was that teachers with special talents should have opportunities for advancement within the teaching field, as White notes.[19]

Conclusions

Several conclusions can be drawn from an exhaustive list of teacher dissatisfactions, but there are some principal conclusions that are more relevant than others. Some of the general causes of teacher turnover from the literature are summarized as follows:

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[18] Gourley and Pourchot, _op_. _cit_., p. 261.

[19] K. White, "Relation of Career Involvement to Persistence in the Teaching Profession Among Beginning Female Elementary Teachers," _Journal of Educational Research_, LX (October, 1966), 51-53.

1. Teachers pick salary difficulties as among the chief causes of turnover.
2. Teachers lack opportunity for advancement in the teaching profession.
3. Teachers as a total group leave for an assortment of reasons, but principally a dislike for administrative and supervisory practices.
4. More men leave the profession than women for reasons associated with status improvement.

It was a conclusion of this review of the research for this decade on teacher turnover that a new personnel structure for teachers be conceptualized. Such a conceptual scheme, if implemented, could alleviate the present inefficiency of the teaching staff system and reduce the undesirable rate of exit of competent teaching manpower. It was the purpose of this study to propose such a model that will, if adopted, hopefully retain teachers in the teaching field.

II. EXAMPLES OF STAFFING PATTERNS

Alternatives to Change

One way to end the teacher drain quickly was by greatly increasing federal, state, and local expenditures to accelerate teachers' salary raises. Another way was to prepare to revise dramatically the organization of teaching responsibilities.

This section was a summary of attempts of efforts directed toward differentiating teachers.

NEA and Trump Reports

Early research reports aimed at professional staff organization focused mainly on how teacher aides could best be employed to ease the professional duties of teaching professionals. But there was still a significant movement afoot to drastically re-structure the pattern of class organization.

A research report of the National Education Association described national programs then operating.

> Although current difficulties have prompted some of these experiments, most of them appear to be aimed not only at meeting the present shortage of teachers, but also, if proved successful, at fundamentally altering the pattern of class organization, particularly at the high school level.[20]

In 1958 Dr. J. Lloyd Trump made an exhortation for uses for scheduling and the use of staff. His exhortations at that time were not taken up. Educators let the gauntlet lay.

> Experimentation has been largely designed to equalize work loads among teachers, but always with the fundamental point of view that no really substantial individual differences exist among teachers, and that efforts should constantly be exercised to produce as much uniformity as possible among staff. What changes were made were largely in the direction of introducing additional supervisory and administrative personnel and providing clerical assistance to these persons, but little was done

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[20] Studies of Utilization of Staff, Buildings, and Audio-Visual Aids in the Public Schools (Washington: National Education Association, Research Division, 1959), pp. 19-20.

to change the role of the classroom teacher except to push him farther down the educational hierarchy.[21]

What Trump was proposing was unmistakably clear: a radical alteration of the role of the classroom teacher. Subsequently, in the same article, he outlined a scheme of instructional staff in a secondary school composed of professional teachers, paraprofessionals, clerks, general aides, community consultants, and staff specialists. He said, "A fundamental purpose of this proposal is to enhance the professional prestige of teachers."[22] Still, there was no indication of a clear demarcation of the limits of the responsibilities and their differentiation among the teaching staff itself.

Staffing for Better Schools

The report, Staffing for Better Schools, published by the U. S. Office of Education, stressed primarily that different kinds of personnel are used by schools.[23] The focus of the report was not to replace the teacher with an army of unqualified staff without administrative support, but rather to extend the reach of the teacher out to the child through the community and into all strata of the society in which the child lives. It was a summary of the kinds of differentiation of activities utilized now by schools and districts through Title I funds.

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[21] J. Lloyd Trump, "New Direction in Scheduling and Use of Staff in the High School," California Journal of Secondary Education, XXXIII (October, 1958), 363.

[22] Ibid., p. 366.

[23] U. S. Office of Education, Department of Health, Education and Welfare, Staffing for Better Schools (Washington: U. S. Government Printing Office, 1967).

The report offered an effective model of total staff differentiation for disadvantaged schools. Some schools and districts used such sophisticated auxiliary personnel as home visit aides, senior citizens, workshop aides, child-care center aides, and all manner of versatile community volunteers.

What was referred to as a shortage of teachers is really only a shortage in critical areas--those specifically which cannot afford to retain teachers because of economic difficulties in the community, and therefore cannot compete with districts or locales that have more attractive advantages.

Education Professions Development Act and U. S. Office of Education Report

The reports mentioned above showed only total staff differentiation and not teaching responsibilities differentiation. However, the passage of the Education Professions Development Act by Congress in June, 1967, which became Public Law 90-35, spurred national action. Several task force reports later became part of the Planning Coordination Committee's report to the United States Commissioner of Education on planning the development of the education profession, and involved some of the nation's most outstanding educators concerned with staff innovation.

All of the task force reports gave priority to the necessity of developing and enhancing the status of professional educators. This concept was worded differently (each task force met in regions throughout the country), but the theme of differentiation was constant. Some samples:

> . . . assign high salary and rank to integrative personnel, supervisors, and master teachers.[24]
>
> It was agreed that differentiated staffing is a basic objective to enhance future holding power and recruitment capacity of the education profession.[25]
>
> . . . definition and adoption of new teacher rules.[26]
>
> The basic overall strategy essential to achieving this goal is the development of differentiated staffing patterns to meet the needs of any given local school district or system as fully as possible. . . .[27]

Task Force Model

Appendix II of the report of the task force on task analysis and role definition was an example of a possible model of a differentiated staffing pattern that offers marked contrast to the one outlined in Chapter IV.

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[24] "Outline of Report of Task Force on the Preparation of Educational Manpower" (unpublished report of a meeting held at Stanford, California, October, 1967).

[25] "Report of Task Force on Recruitment, Selection and Evaluation of Educational Manpower" (unpublished report of a meeting held in Washington, D. C., October, 1967).

[26] "Task Force Report: Organization, Administration, and Institutionalized Change" (unpublished report of a meeting held at the U. S. Office of Education, Washington, D. C., October, 1967).

[27] "Report of a Task Force Meeting on Task Analysis and Role Definition" (unpublished report of a meeting held at Indiana State University, October, 1967).

The rationale underlying the development of the task force model however--though stated "in terms of the management of learning"--is an analysis of present teaching functions. "The task analysis of the teaching function was limited to the teaching responsibilities now carried out by elementary and secondary schools. . . ."[28] The units in the management of learning listed in the proposed model are: (1) educational personnel training, (2) teaching, (3) production and utilization of instructional media and materials, (4) administration, (5) pupil personnel, and (6) community services. Notice that all the elements are organizational.

Three points were crucial to an understanding of the rationale of the development of this model.

1. It is an analysis of present teaching responsibilities.
2. It is an analysis only of one aspect of some units in the management of learning: teaching.
3. The teaching function is differentiated according to tasks.

What this means is that the model essentially differentiates only present teaching tasks, not responsibility levels based on continually changing student learning needs. It might be inappropriate but not inexact to say that teaching functions and tasks might be carried out in the school even though no students were present.

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[28] *Ibid.*, Appendix II. (No pagination.)

The distinction between the basic rationale underlying the development of the task force's teacher differentiation into teaching functions and tasks, and the model suggested in Chapter IV differentiating levels of responsibility in the management of learning based on student learning needs, was essential to a further understanding of the rationale of this study.

McKenna's Model

More recently (1967), McKenna attempted to develop a differentiated staff proposal based on more than a hierarchy of rank.[29] His perspective was to base teacher differentiation on the:

> . . . learning tasks of pupils (skills, knowledge, talents, interpersonal attitudes and behaviors) rather than levels of rank of teachers (assistant, intern, beginning professional, etc.

He suggested five levels of teachers with the following kinds of proficiencies: (1) Teacher Technologist, (2) Liberal Engineer, (3) Identifier of Talents, (4) Developer of Talents and Attitudes, and (5) Facilitator of Attitude and Interpersonal Behavior Development. His proposal at least identified the major learning tasks of pupils, viz., the mastering of basic skills and knowledge, the developing of talents, and the developing of interpersonal behaviors and attitudes.

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[29] Bernard McKenna, School Staffing Patterns and Pupil Interpersonal Behavior: Implications for Teacher Education (Burlingame: California Teachers Association, 1967).

The plan still left unresolved the question of how teachers can be identified to perform these functions and exactly what their overlapping levels of responsibility are to be.

Report to Commissioner

The Appendix of the Report to the U. S. Commissioner of Education by the Planning Coordination Committee illustrated four possible models of differentiated staffing.[30] These models were limited in scope to the schematic, and were not described in detail. They were illustrative of interrelationships among the staff. Though they did not fully provide a framework for implementation, they were "a starting point for thinking about roles, new structures, and a new mix of institutions which can make a powerful contribution to the learning environment of any school."[31] (See Figure 1.)

Temple City's Program

Perhaps the most significant development of the proposals of the differentiated staffing concept, however, had been undertaken by the Temple City Unified School District in Los Angeles County. A brochure described its efforts, which have been sponsored by a $41,840 Kettering Foundation grant.

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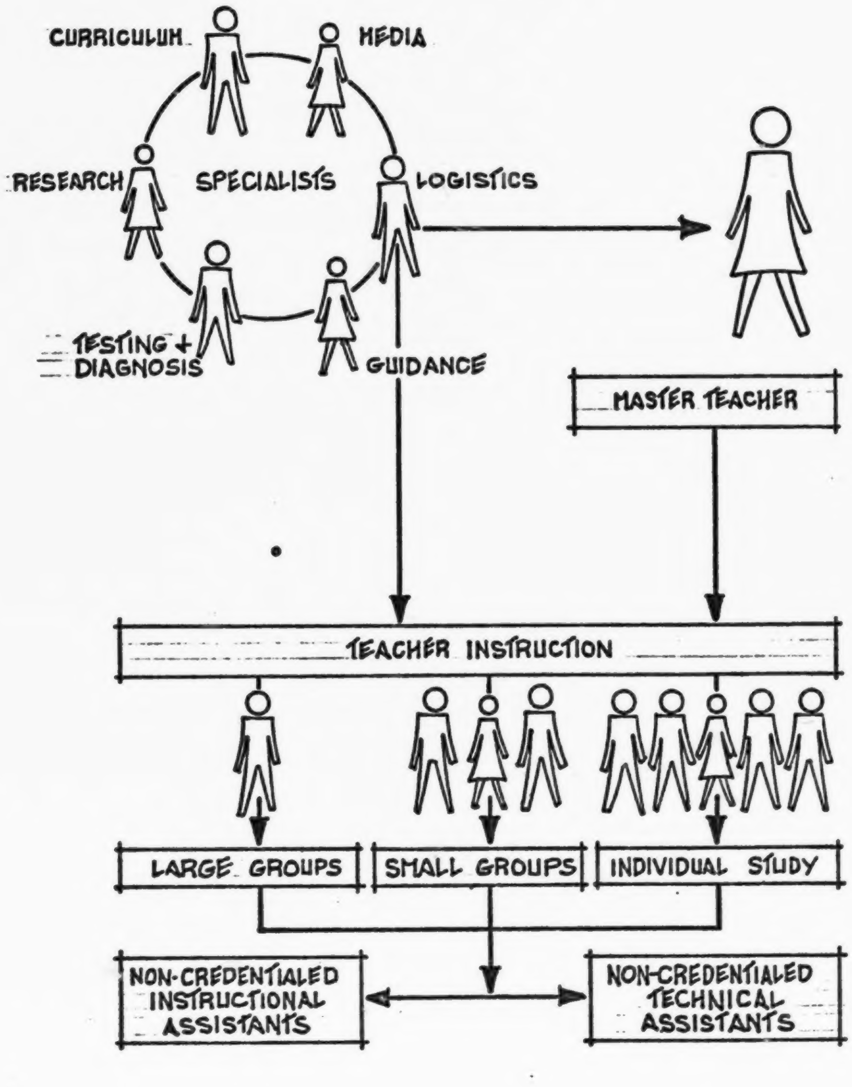
[30] Dwight Allen, *et al.*, "A Report to the U. S. Commissioner of Education Planning the Development of the Education Profession" (unpublished report, November 15, 1967).

[31] *Ibid.*, p. 37.

FIGURE I

DIFFERENTIATED STAFF


CURRICULUM
MEDIA
RESEARCH
SPECIALISTS
LOGISTICS
TESTING + DIAGNOSIS
GUIDANCE
MASTER TEACHER
TEACHER INSTRUCTION
LARGE GROUPS
SMALL GROUPS
INDIVIDUAL STUDY
NON-CREDENTIALED INSTRUCTIONAL ASSISTANTS
NON-CREDENTIALED TECHNICAL ASSISTANTS

The realization of how important the innovative struggles of this district are had been very clear to all the personnel, both teaching and administrative, presently engaged in implementing what has never been tried before. "This study is quite literally the first to propose a basic break in the accepted pattern of school organization. . . ."[32]

A basic assumption behind the thorough analysis of differentiated staffing of the district was underscored in a statement on rationale.

> The assumption is made that a differentiated staffing plan will improve the teaching profession and thus increase the effectiveness of instruction. Since such a plan has not been tried before, evidence to the contrary cannot help but be conjectural at this point.[33]

There was an obvious tone of optimism and experimentalism. The district realized it was embarking on an uncharted journey, but realized even more the importance of the assumption that effective instruction would be improved, and therefore tended to minimize the difficulties in breaking the organizational pattern that has persisted.

District task forces had been organized to probe into questions pertaining to instruction, organization, finances, legal matters, and job descriptions. The teaching personnel included staff teachers, senior teachers, teaching curriculum associates, and teaching research associates. Other kinds of supportive personnel included academic assistants and educational technicians.

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[32] "Temple City Differentiated Staffing Project" (unpublished brochure, Temple City, California, September, 1967), p. 2.

[33] _Ibid._, p. 6.

Whatever the nomenclature used, the district made a significant stride forward toward differentiating the responsibilities of its teachers. The crux of what the district was trying to accomplish is contained in the summary of "Towards a Differentiated Teaching Staff" in the January, 1968, issue of Phi Delta Kappan.

> Differentiated staffing is a concept which challenges a whole host of notions about how American education should be organized and operated. At the moment it may be heresy; in a decade it may be practice.[34]

A model of the Temple City program is shown in Figure 2. Observe that the teaching responsibilities are ratios, and are not defined in terms of a teacher himself or of what students need. Even in the advanced planning stages newly defined teacher responsibilities were based on surveys of present teaching functions.

III. TEACHING STYLE AND STUDENT LEARNING

Most research on the interaction of teaching style (defined in Chapter I as "the behavior of a teacher in the presence of students") and student learning, considered both the cognitive and affective aspects of personality. For example, the research included: (a) characteristic teacher behaving roles, (b) physical-physiological characteristics, (c) affective sets, (d) retrievable information from the teacher, and (e) general academic and verbal teacher ability.

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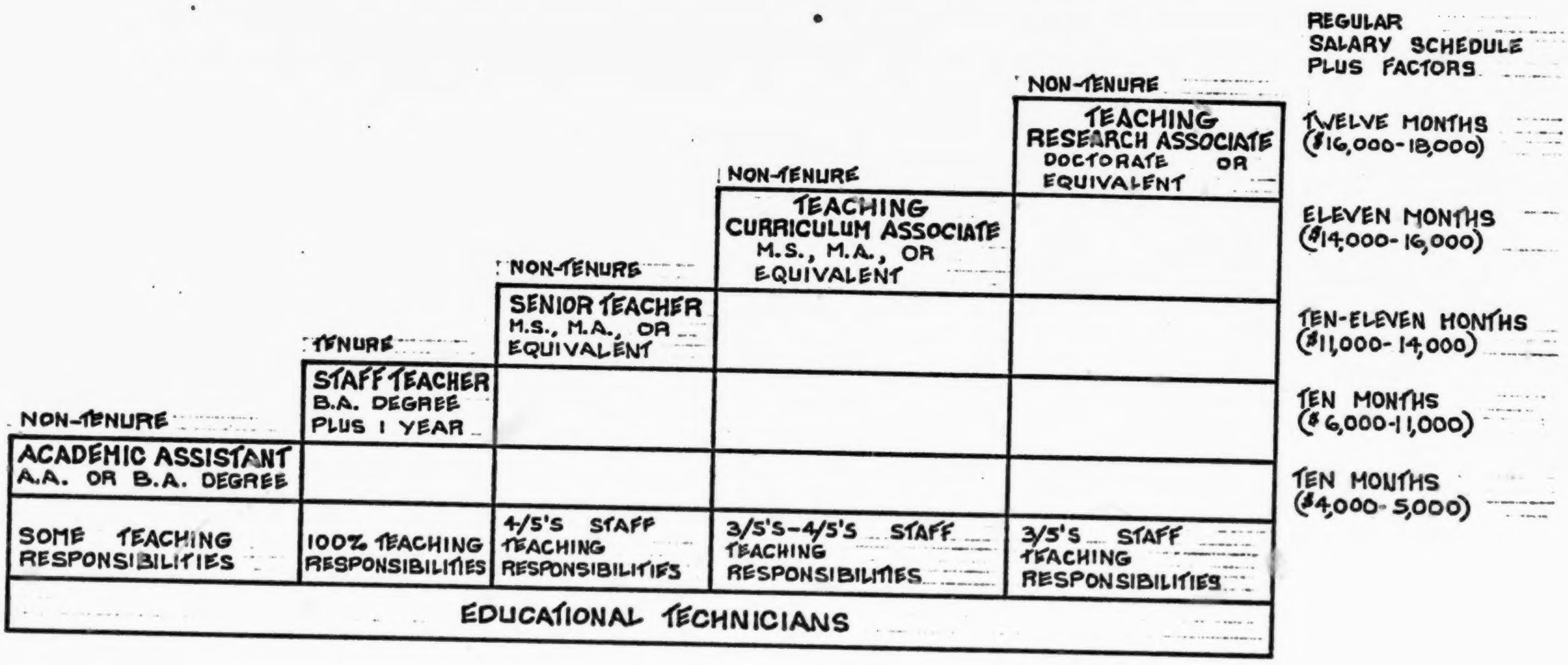
[34] M. John Rand and Fenwick English, "Towards a Differentiated Teaching Staff," Phi Delta Kappan, XLIII (January, 1968), 268.

FIGURE 2

TEMPLE CITY UNIFIED SCHOOL DISTRICT

A MODEL OF DIFFERENTIATED STAFFING


REGULAR SALARY SCHEDULE PLUS FACTORS
NON-TENURE
TEACHING RESEARCH ASSOCIATE
DOCTORATE OR EQUIVALENT
TWELVE MONTHS ($16,000-18,000)
NON-TENURE
TEACHING CURRICULUM ASSOCIATE
M.S., M.A., OR EQUIVALENT
ELEVEN MONTHS ($14,000-16,000)
NON-TENURE
SENIOR TEACHER
M.S., M.A., OR EQUIVALENT
TEN-ELEVEN MONTHS ($11,000-14,000)
TENURE
STAFF TEACHER
B.A. DEGREE PLUS 1 YEAR
TEN MONTHS ($6,000-11,000)
NON-TENURE
ACADEMIC ASSISTANT
A.A. OR B.A. DEGREE
TEN MONTHS ($4,000-5,000)
SOME TEACHING RESPONSIBILITIES
100% TEACHING RESPONSIBILITIES
4/5'S STAFF TEACHING RESPONSIBILITIES
3/5'S-4/5'S STAFF TEACHING RESPONSIBILITIES
3/5'S STAFF TEACHING RESPONSIBILITIES
EDUCATIONAL TECHNICIANS

The reason for research in the interaction of teacher and student personality was crucial to the understanding of differentiating teachers to promote and reinforce students' learning potential. Student learning needs, as defined in Chapter I ("The individual student differences to be accommodated by individual teacher differences.") made this reinforcement imperative.

This section of the literature was not a plea for measuring teacher or student affectiveness. It was a plea rather for a reorganization of teachers to adapt to the individual differences of students, because the research did indicate that certain kinds of students achieve better with certain kinds of teachers.

The work of Heil and his associates, for example, in relating student achievement and teaching style, was significant.[35] They hypothesized that the teacher's behavior in a certain class would evoke a certain amount of achievement with students of a particular set of feelings and level of intelligence. Four personalities were categorized: (1) the conformers, characterized by high social orientation and control over impulses; (2) the opposers, those who exhibited feelings of pessimism and intolerance of ambiguity; (3) the waverers, described as anxious and indecisive; and (4) the strivers, who showed a drive for recognition.

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[35] L. M. Heil, M. Powell, and I. Feifer, "Some Characteristics of Teacher Behavior Related to the Achievement of Children in Several Elementary Grades" (unpublished study, New York University, New York, New York, 1960).

Teachers were divided into three personality groups--the fearful, the turbulent, and the self-controlling.

Student achievement was contrasted for each student personality category under each type of teacher personality.

The results were that teaching style made a significant difference for both the opposers and the waverers personalities.

The turbulent teachers--concerned with freedom of expression, strong attitudes, highly consistent--were more successful overall in teaching math and science.

In a similar kind of study, Grimes and Allinsmith attempted to relate school achievement with an interaction of student personality and teaching method. Their conclusions were far-reaching for the psychology of learning and instruction as well as for teaching specific skills. Their results showed that the choice of instructional methods makes a big difference for certain kinds of student personalities.[36]

Studies by Cogan concluded that certain kinds of teacher traits effect the amount of work assigned students, and that students initiate more work themselves.[37]

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[36] Jesse W. Grimes and Wesley Allinsmith, "Compulsivity, Anxiety, and School Achievement," Causes of Behavior II, Judy F. Rosenblith and Wesley Allinsmith, editors (New York: Allyn and Bacon, 1966), pp. 486-99.

[37] Morris L. Cogan, "The Behavior of Teachers and the Productive Behavior of Their Pupils: I. Perception Analysis and II. Trait Analysis," Journal of Experimental Education, XXVII (December, 1958), 89-124.

Ryans noted a *high* positive relationship, for elementary school classes, between the observers' assessments of productive student behavior (e.g., assessments presumably reflecting the characteristics of alertness, participation, confidence, responsibility, self-control, initiating behavior, etc.) and these observers' assessments of previously identified patterns of teacher behavior.[38] He noted, however, *low* positive relationships for secondary school classes.

The logic of the argument for teacher behavior strongly influencing student behavior is really what the whole business of education is all about, and is irrefutable, as Ryans noted.

> Qualitatively, at least, the logic of this argument appears sound: i.e., pupil behavior is a function of teacher behavior, the teacher being a necessary, though not sufficient, condition for purposeful and productive pupil performance.[39]

Page, in an interesting study, found that the average secondary school teacher who takes time to write "encouraging" comments on student papers has a powerful and measurable effect on "student effort, or attention, or attitude, or whatever it is which causes learning to improve. . . ."[40] This conclusion was independent of "school building, school year or student ability."

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[38] David G. Ryans, "Some Relationships Between Pupil Behavior and Certain Teacher Characteristics," *Journal of Educational Psychology*, LII (April, 1961), 82-90.

[39] *Ibid*., p. 82.

[40] Ellis Batten Page, "Teacher Comments and Student Performance: A Seventy-Four Classroom Experiment in School Motivation," *Journal of Educational Psychology*, XLIX (March, 1958), 173-81.

Supposing that teaching style is a positive influence on student learning and achievement, then the next step logically would be to give teachers information about the feelings and desires of their students and how they would wish to have their teachers perform.

This particular kind of study was done by Gage and his associates.[41] They intended to test the influence of written opinions of teachers' own students. Their results not only produced change in teacher behavior as a result of written student feedback, but they also produced an improvement in the accuracy of the teachers' perception of their own students' opinions.

It seemed apparent from these citations in teaching style and student learning (Heil, Grimes and Allinsmith, Cogan, Ryans, Page, and Gage, *et al.*), and those in Chapter I relating learning and teaching (Goldberg, Torrance, Waetjen, and Gage) that the literature was positive that variations in student performance were related to variations in teacher behavior. Particular teachers did affect particular students differently.

IV. SUMMARY

Staff differentiation is proposed as a solution to halt teacher turnover. It was clear in the short history of the literature on how teaching roles should be differentiated that there was no uniformity of procedure. Each of the models suggested at the time of this writing had assumed something different about how staff should be organized. The literature still revealed a problem: What new concepts or concept, what rationale should determine the utilization of staff assuming differentiation?

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[41] N. L. Gage, Philip J. Runkel, and B. B. Chatterjee, "Changing Teacher Behavior Through Feedback from Pupils: An Application of Equilibrium Theory," *Readings in the Social Psychology of Education*, W. W. Charters and N. L. Gage, editors (New York: Allyn and Bacon, 1963), pp. 173-81.

The question existed, then, of how to proceed in developing a rationale for building a model.

A model is, after all, a symbol, a metaphor for the representation of a conceptual reality.[42] Its use is a good example of how to plan for the phase-in of a project or the incorporation of an idea into action. It can be a schematic diagram or drawing, a verbal model, a computer simulation, a structural molding of a scaled-down figure, such as a cardboard representation of a future building, or any symbol that stands for what is to be implemented. (See Chapter III, Why a Model? Definition of a Model, and Uses of a Model.)

Again, the problem arising from the literature was three-fold: (1) there was a need for differentiation to alleviate actual teacher turnover; and (2) present models of differentiation showed no uniform rationale of development; and (3) teaching style was related to student learning. Therefore, this study was the building of differentiated teaching personnel models based on a consistent rationale for development, namely, the organization of levels of teaching responsibilities built from activities in the management of learning.

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[42] See Raymond B. Cattell, Handbook of Multivariate Experimental Psychology (Chicago, Rand McNally & Co., 1966), p. 42. "The advantage of a model is that it is precise, and clear in its testing implications."

CHAPTER III

PROCEDURES

The purpose of this study was to build a model of differentiated teaching personnel and to test it among selected educators. The twin aspects were building the model and testing the rationale for building it. This chapter described the reasons for using a model, its uses, and the testing procedures.

I. THE MODEL

Why a Model?

It is perhaps appropriate to pause and ask why another model has to be built at all. Why wouldn't it be preferable to analyze existing models like those in Chapter II and find out which one educators thought best? As noted in Chapter II, the assumption seemed to be in most models of differentiated staffing that inventories of teachers' duties need re-shuffling. The assumptions seemed to include present teaching responsibilities and not present and future student learning needs. This model departed from others because its assumptions are rooted, and the rationale for its development, in curriculum and instruction and student-teacher interactions.

Decisions about the basis of staff utilization preceded plans about the organization of staff. It was conjectural whether or not present secondary school staff organization served the student to best advantage. Consequently, if present, traditional structures of staff needed revision, and even existing models of differentiation did not alter the teacher's responsibilities towards students, it seemed the development of a new model was in order.

Use of the Model

Every model has its shortcomings, just as every instrument has its inappropriateness.[1] The shortcomings of models are their rigidity of form, their over-emphasis on symbols, and possibly their over-simplification of complex phenomena. Regardless of their imperfections, models are a way of recognizing reality and of structuring approaches.

This model was not a theory of behavior. It did not show, for example, the interaction between personality variables and decision-making processes associated with how a staff of high school teachers operated. Some models, like Getzels', even showed conflict in role behavior.[2] This model was not concerned with an analysis of role or personality behavior or conflict, but analyzed instead the responsibility dimensions, not of teaching roles, but of _student needs_, derived from units in the management of learning.

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[1] Abraham Kaplan, _The Conduct of Inquiry_ (San Francisco: Chandler Publishing Co., 1964), p. 275.

[2] Jacob Getzels, "Conflict and Role Behavior in the Educational Setting," _Readings in the Social Psychology of Education_, W. W. Charters and N. L. Gage, editors (Boston: Allyn and Bacon, 1963), pp. 309-18.

Neither was the model an attempt to measure change in overall effectiveness or instructional environment. Because there was wide disagreement among educators about the nature of devices to measure effectiveness of learning, the reactions to this model, as will be described shortly, were rank assignments of priorities. Although such a model will not solve personnel problems, it can provide information upon which to base decisions about staff utilization.

II. TESTING THE RATIONALE FOR BUILDING THE MODEL

It will be recalled from Chapter I that seven submodels comprise the staff differentiation model. The definition of a submodel ("that which illustrates the structure of relationships in a parent-model") makes it clear that a submodel is only representative of the whole model. These submodels were the bases for testing the assumptions for building the semantic model of teaching differentiation. The concept of priority, defined as the degree to which the panel thought a submodel would have ranking precedence, was the device used to attempt to validate the rationale for developing the model.

Selection of Educational Experts

The panel of experts or judges used to test the rationale for the model were chosen in the following manner. Initially, a group of educators known to be familiar with the patterns of differentiated staffing were selected based on a judgmental valuation. Members of the doctoral committee were asked to add names of educators they thought would strengthen the panel. Then, in November, 1967, the Planning Coordination Committee planning the development of the education profession issued a report to the U. S. Commissioner of Education. Members of that Committee were also solicited to participate. All together, twenty-three packets containing the submodels, directions, and individual cover letters and response sheets were sent out.[3] Sixteen of the twenty-three responded (fourteen initially, and two after a second individual follow-up letter; one arrive after the study was completed). Of those asked to participate, 73.9 per cent actually replied. Fifteen of the sixteen respondents were randomly selected from a table of random numbers to form the survey sample.

The Instrument

A questionnaire reply sheet (see Appendix A) was developed to measure response. This instrument was designed to measure the value responses in terms of rank scores.[4] More specifically, it was judged to be an adequate means of assessing what the chosen panel thought about the responsibility models of staff differentiation in terms of the submodels.[5]

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[3] See Appendix A for a sample of materials sent to the selected educators.

[4] B. J. Winer, Statistical Principles in Experimental Design (New York: McGraw-Hill Book Company, 1962), pp. 136 ff.; and Maurice G. Kendall, Rank Correlation Methods (London: Charles Griffin & Co., Ltd., 1948).

[5] Ranking procedures have been used extensively, especially since their development by Kendall. "In practice, ranked material can arise in many different ways. . . . According to some quality which we cannot measure on any objective scale." Kendall, op. cit., pp. 1-2.

The respondents ranked what they thought was the order of the models, that is, the priority as defined in Chapter I. There was no attempt to probe into how strongly each respondent thought the submodels he was ranking ought or ought not to be the best way of using staff. Nor was there any attempt to determine how important each considered differentiated teachers relative to other personnel concepts. The primary interest was to demonstrate the necessity for a satisfactory rationale, and that, for any future consideration of differentiated staffing, the first deliberation must be the learning needs of students and not staffing patterns.

In sum, the respondents:

1. were chosen for their knowledge of the utilization of staff;
2. were assumed, in varying degrees, to be familiar with the concept of staff differentiation, but not necessarily particular models;
3. reacted only according to the conviction of the concepts; and
4. were presented with a schematic representation of teacher submodels, not full semantic diagrams. No attempt was made to get an overall reaction. The intent was to obtain agreement with the concept and rationale for development of the model.

Statistics and Parameters

Fifteen educators composed the survey sample and were randomly selected from an accessible population of respondents to the questionnaire to form a panel of educational experts to rank schematic representations of the submodels. The representations themselves were a random sample of the models built for a differentiated teaching staff.

The sample size drawn had of necessity to be small since a prerequisite for serving as a member of the panel was familiarity with the underlying premises of differentiated teaching personnel. The few known to have this familiarity, based on a judgmental decision, eliminated the possibility of a large sample size.

Furthermore, the small sample size precluded the use of a parametric test because the nature of the inference cannot assume something that might not be true about a population value. Moreover, because the study determined rank priorities, the assumption of a normally distributed population could not be used. However, the robustness of the test is not reduced--only the extent of the external validity.

Estimating Reliability

The test of the instrument was the analysis of variance for ranked data.[6] Kendall's coefficient of concordance (W) seemed ideal as a means of testing significance in agreement because it offered easy computation for ranked data and yielded a level of agreement among judges' ranks.[7] The analysis of variance for ranked data also provided an average intercorrelation between people $(\bar{r})$ and a chi square (χ^2).

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[6] Winer, loc. cit.

[7] Sidney Siegel, Nonparametric Statistics for the Behavioral Sciences (New York: McGraw-Hill Book Company, 1956), pp. 229-39; and George Ferguson, Statistical Analysis in Psychology and Education (New York: McGraw-Hill, 1966), pp. 226 ff.

The coefficient of concordance measured the degree to which the panel members agreed among themselves in their ranking of submodels. The average intercorrelation indicated the correlation of ranking between judges or panel members. The chi square measured the probability of obtaining differences between the actual and expected frequencies in the matrix as a result of sampling fluctuation. The chi square confirmed whether or not there was a difference between the mean ranks of the different submodels.

Pilot Study

A pilot study, conducted with undergraduate education students at Arizona State University, was used to demonstrate the reliability of the written directions and the precision of the device used for ranking. It was an attempt to measure bias in the clarity or lack of clarity of understanding the written direction to be submitted to the panel of experts.

The pilot experiment was conducted in the following manner. Seventy-one students served as a real population from two classes of EF 322, Psychological Foundations of Education. In an attempt to reduce error in giving written instructions, the investigator did not speak, but instead wrote on the blackboard the following directions:

PLEASE READ CAREFULLY

PLEASE DO NOT ASK QUESTIONS

PLEASE MARK ONLY AT THE BOTTOM OF THE PAGE

Thus, subjects relied only on what was contained in the written directions (see Appendix C) and their reactions were to the nature of the directions and their comparative degree of clarity, not whether or not they understood the concepts of differentiated teaching personnel.

The Likert-like items developed were:

(a) _____ very clear

(b) _____ clear

(c) _____ somewhat difficult to understand

(d) _____ very difficult to understand

(e) _____ not clear at all

These items were assigned the following quantities: very clear = 5, clear = 4, somewhat difficult to understand = 3, very difficult to understand = 2, and not clear at all = 1.[8]

The null hypothesis was that there would be no difference between the respondents either in the direction of very clear (5) or not clear at all (1). The expression of this was the middle Likert item, (3), somewhat difficult to understand, that respondents would find the directions both somewhat unclear and somewhat comprehensible. The middle item, it was assumed, because of its neutrality would not be expressive of either clarity or confusion. The alternative hypothesis was that the directions would be significantly clear, and therefore in that direction, viz., number five (5).

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[8] Cf. John Best, Research in Education (Englewood Cliffs, New Jersey: Prentice-Hall, 1959), pp. 157-60.

Twenty-five students were selected randomly by using a table of random numbers.[9] The alpha level was set at .05. The results were significant at the .01 level. Hence, the null hypothesis, which predicted that students randomly chosen from the accessible population would have some difficulty in understanding the proposed directions, was rejected. The research hypothesis, that undergraduate education students randomly selected from two foundations classes at Arizona State University would tend to understand clearly the proposed directions, was accepted.

Statistically, this meant that if the same set of directions were understood by a random sample of two foundations classes, they would also be understood by another random sample from the same population.

Limitations of Procedures

The analytical approach of this study had several limitations. A hypothetical model, derived from inference and deduced from concepts in the literature on teacher turnover, teacher-student interactions, and instruction and learning, was a limitation in design. The shortcomings of models in general were described under "Use of the Model." Procedures associated with testing the model did not control for all bias. The selection of the participants to react to the design was subjective. The instrument itself, though a pilot study showed that its directions were significantly understandable, was not strong in external validity. What is true of undergraduate education majors in comprehending written directions may or may not be true of professional educators.

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[9] James E. Wert, Charles O. Neidt, and J. Stanley Ahmann, Statistical Methods in Educational and Psychological Research (New York: Appleton-Century-Crofts, 1954), pp. 416-17.

The estimators of reliability, because of the small sample size, could not be used as reliable measures applicable to a normally distributed population. The reasoning behind the statistical validation was that if a survey were conducted with all educators knowledgeable about differentiated teaching staff that they would all concur in the direction of the hypotheses. The fact that the sample was small does not reduce the theory of probability--but the question remained whether or not the population was representative on a national scale.

Without undue apology, the strengths of the study were in the attempts to provide a model for testing which future models can use as a basic referent, and to outline the variables for decision-making in re-thinking the process of staff utilization.

III. SUMMARY

This chapter endeavored to describe procedures for the development of a model to meet existing staff needs in the secondary school. The problem of this study was precisely the development of a semantic model to satisfy that need. The following chapter contains that model.

This chapter also set forth the necessity of testing the rationale for building the model with educators knowledgeable about current differentiated staffing patterns. The selection procedures of the panel were described as well as the development of the questionnaire instruments, measures of reliability, the pilot study, and limitations of procedures.

CHAPTER IV

THE DEVELOPMENT OF A MODEL OF DIFFERENTIATED TEACHING PERSONNEL

It was not a part of this study to outline or compute total personnel requirements. The importance of this point of departure of this study was only to delineate staff responsibilities not staff requirements. There were thus no examples of numbers of students, cost of materials, amount of human energy required, or time necessary for achieving the goals of instruction. Such measures are, of course, essential in the operation of a school's program, but they were not a part of this particular study.

I. DIFFERENTIATION OF RESPONSIBILITIES

Procedures of Differentiation

The differentiation of staff responsibilities is a way of emphasizing the necessity of accommodating expanded and diverse student interests and simultaneously of managing the learning activities in a school to best advantage.

It is not necessary to detail thoroughly every task that a teacher might have to perform during the course of a school day. To compose catalogues of teacher tasks and to use such lists as a basis for delegation of authority seems redundant. It is more important to outline carefully the different units in the management of learning, and then to differentiate according to levels of responsibility. The differentiation is not a way of establishing load, but priority of tasks.

Definition of Responsibilities

There are three levels of responsibility in this study. They are: (1) major, (2) subordinate, and (3) planning. A major responsibility is that obligation accountable for operation, continuance, and assessment in any particular unit in the management of learning. A subordinate responsibility is assistance in the actual operation. A planning responsibility is the obligation to assist in the designing of the operation and in its evaluation. It was felt that three levels encompass all phases of an activity from its inception in planning to evaluation.

It is taken for granted that there will be flux in the school's program as it adjusts to continuing research findings. Hence, the planning responsibility is not necessarily a tertiary responsibility directly and hierarchially subordinate to the major responsibility. Levels of responsibility are not to be thought of as chains of command for decision-making, but rather as total and involved assistance, at varying levels of organization, by all members of the teaching staff.

The levels of responsibility will first of all be considered in their relation to various activities in the management of learning (see Submodel 3). Teaching personnel have been differentiated according to these activities, and these are Submodels 4 through 7: the Assistant, Associate, Senior, and Master teachers.

II. SUBMODELS

The first three Submodels follow--the Assumptions, the Definitions, and the Management of Learning--illustrating the variety of activities and levels of responsibility. It will be recalled that the submodels are semantic analogues, and consequently what follows under the submodel headings are the submodels.

Submodel 1--Assumptions

Several assumptions undergird the structure of the instructional program in this model. Some of these pressing educational assumptions are thought of as innovative, yet few question their educational validity.

1. A school should have a flexible course structure that provides for the expansion or deletion of the growing volume of course content. Teaching strategies adapted to the demands of specific course material decided by teams of instructional personnel are definitely more advantageous than strategies devised by teachers acting singly. It is precisely within the instructional phase of the school's total program that there must be more efficient assignment of teaching responsibilities.
2. Course sequencing allows students to build and maintain skills by studying in each major curriculum area each year

for amounts of time and in class situations compatible with their individual interests and abilities. Such sequencing cannot be accomplished by individual teachers acting separately and without knowledge of what other teachers are doing in other subjects.

3. Class meetings should be of a duration appropriate to their specific purpose, and student groups should be individually tailored to the aims of a given instructional lesson.
4. The instructional program should include division of course content into elements that can be transmitted to entire enrollments, to identifiable alternative groups, and to individuals as occasions demand.
5. Advisory relationships should exist between teachers and students based on educational needs, not just administrative or organizational considerations.
6. Instructional modes should have provisions for large groups, small groups, and individually directed study programs.[1]

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[1] This assumption is found elsewhere. See Robert Bush and Dwight Allen, A New Design for High School Education (New York: McGraw Hill Book Company, 1964), p. 8. "Each subject, when properly taught, will include four basic types of instruction: (a) independent and individual study, (b) small group instruction, (3) laboratory instruction, (d) large group instruction." This study retains the same terms with some modification and distinction. Large and small groups are means of instruction, and do not determine the relative sizes of student groups. Independent and individual study will, in this study, be known as individually directed study to emphasize that students are not completely independent in what they do or the manner in which they do it. Laboratory

Management of Learning

The management of learning is the basic premise upon which ultimate lines of authority will be drawn. For the question of manpower organization is only answerable in the context of how it affects the continuous learning of students. Even though teachers are charged with the responsibility for instruction in the classroom, it is rare that they are given the opportunity to change procedural patterns. Their service on committees and councils only serves to heighten this fundamental dichotomy between their understanding of the management of learning and decisions made by administrative consensus. The assumption, therefore, has to be that differentiated teaching personnel will demonstratively improve the effectiveness of the program of instruction. Since differentiated teaching personnel as a conceptual scheme has not been embraced in schools as an efficient method of utilizing manpower, evidence that it will be ineffectual, at this point in time, is conjectural and inconclusive.

The major activities of the management of learning which this

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instruction is not, strictly speaking, felt to be a separate kind of instruction. What learning that does go on in the laboratory might be individual scientific experimentation, small group experimentation, or even large group design, if it is teacher-dominated. So although there might be some ambiguity in the terms large and small group, since size is not the issue, the terms are used consistently throughout this study to preserve continuity with previously established literature.

study proposes are the instructional modes, curriculum, facilities, testing, teacher evaluation, and student responsibilities. These activities are not meant to be completely satisfactory for any school program. They are only illustrative of what are considered important components.

The following definitions constitute the second semantic submodel.

Submodel 2--Definitions of Terms

1. Instructional Mode--the interaction which exists between the curriculum, the learner, and the teacher(s).
2. Curriculum--"planned courses, subjects, and activities which are designed to carry out the purposes of the school."[2]
3. Facilities--that which promotes the ease of operation, or courses of study in the educational program.
    a. Resource Center--a facility which provides necessary materials for specialized study, either private or group.
    b. Accessible Labs--facilities which provide special equipment or resources for pursuit of experimentation, research, or practice.

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[2] LeRoy H. Griffith, Nelson L. Haggerson, and Delbert Weber, Secondary Education Today (New York: David McKay and Company, 1967), p. 68.

4. Testing--comparative conditions designed to measure learning progress.
5. Teacher Evaluation--the comparative rating of one person by another.
6. Student Responsibility--kinds of students assigned to different levels of teachers.

Submodel 3--Management of Learning

Instruction. Instruction is the interaction which exists between the curriculum, the learner, and the teacher(s).[3] The model envisions the teacher as making decisions, not only in carrying out the curriculum, but also in how most effectively to instruct. That curriculum and instruction are intimately interrelated is understood more in the breach than in the practice.

> This role [the teacher's role in curriculum planning] is really part of the instructional role and so curriculum development may well be considered as part of the instructional process.[4]

Consequently, it is important that instruction not be viewed as an end of the educational process in itself, but as a pattern in the process ever subject to change and review, and it is even more important to assess its value in terms of what it is attempting to accomplish. The effectiveness of the school's instructional program is only as good

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[3] *Ibid.*, p. 116.

[4] *Ibid.*, p. 118.

SUBMODEL 3[a]

ILLUSTRATION OF THE VARIETIES OF ACTIVITIES AND LEVELS OF RESPONSIBILITY IN THE MANAGEMENT OF LEARNING

Activities	Responsibility Major[b]	 Subordinate[c]	 Planning[d]
Instructional Mode:			
large group	senior	associate	master
small group	assistant	associate	senior
individually directed study	senior	master	assistant
Curriculum:			
unit packages	associate	senior	assistant
sequencing	master	senior	associate
programs	senior	master	associate
experiments	master	senior	associate
Facilities:			
resource center	senior	associate	assistant
accessible labs	associate	assistant	senior
Testing:			
coordinating	associate	senior	assistant
designing	senior	master	associate
experimenting	master	senior	associate
Teacher Evaluation:			
assistant	associate	senior	master
associate	senior	master	assistant
senior	master	associate	assistant
master	principal	senior	associate
interns/cadets	assistant	associate	senior
Students:			
academic advisor	senior	master	associate
outstanding	master	senior	assistant
deficient	master	senior	assistant

[a] The vertical dimension illustrates the kinds and varieties of activities within the school, and the horizontal dimension illustrates the levels of authority and responsibility. The varieties of activities are not meant to be complete, but only illustrative.

[b] Major Responsibility--responsibility for the operation, continuance, and evaluation.

[c] Subordinate Responsibility--assistance in the actual operation.

[d] Planning Responsibility--assistance in the design of the operation and its evaluation.

as the school's total program.

The large group. The large group phase of the instructional program is an integral part of the total system because it is the main channel of information from teacher to student. It is that which can be presented commonly to a large or small number of students. It is not necessarily a lecture. With teams of teachers it might be a means of offering differential assistance to individual students. It might also be a way of practicing certain skills, of remediating skills not yet fully acquired, or of repeating information already known. The point is that large group instruction is no less effective simply because it usually takes place with a large number of students. It is a way of individualizing the instruction to give a common presentation when all students are prepared for a common experience. Such commonly structured experiences can be narrowly focused for selected groups of students, or broadly focused for differential learning for a wide range of students.

However, though irrelevant to the consideration of the task to be accomplished, size would be one of the criteria to be considered in the organizational dimension assuming a differentiated teaching staff. Length and frequency would also certainly dictate staffing patterns and the maximum use of facilities.

Several kinds of large groups can substantially contribute to the overall effectiveness of the large group instructional program. Self-contained large groups could function to provide marginal material to the regular course offerings, could provide transitions from unit to unit within a course, and could provide for the development of isolated skills.

Large groups could also act as supplements to common presentations. They could present live or recorded prior presentations. They could also offer variation in presentation or further elaboration.

Still other large groups could offer material that is random for the sake of diversity, or sequential in nature to demonstrate the relation of subject to subject within the school's program.

But besides the diversity to which teams of teachers working in conjunction with each other could utilize the concept of the large group as a way of presenting common material to students, the large group cannot be the only way by which a school furthers the management of learning in instruction. The large group, in the final analysis, is only understood in relation to the small group.

The small group. One of the most important elements in the establishment of small instructional groups is the training and preparation of teachers who understand the nature and goals of learning to be accomplished within its framework.

There are also many kinds of small groups, and the purpose of the learning should dictate the type. It is not the instruction and organization which must come first, but the nature of the activity and the type of learning.

Small groups, like large groups, might very effectively be used for the exchange of information, what the traditional classroom easily accomplishes now. On the other hand, they might equally well be a means of dividing the labor in a task, as groups of boys dismantling an automobile in auto mechanics class. Or they might be structured in social sciences as a means of bringing about belief and attitude change. They might be used as a convenient way of manipulating problem-solving activities.

However they are organized and for whatever purpose, the alternatives for leadership within the group and the emergence of qualities which students can develop as a group nowhere else in the present instructional system lie within the domain of the small group as an instructional design. Grouping is just one of the major decisions that differentiated personnel will have to consider. Students might be grouped according to age, sex, by peers, at random, as volunteers, or by teachers.

The designation of the level of responsibility within the group is another major decision for small group staff. What will be the scope of authority for leadership? Will teachers allow individual leadership to emerge spontaneously from within each group? Will they designate who that authority will be? Will the scope of authority be shared conjointly or individually? Will the leader of the group be selected by peers within the group? How stable will be the leadership? Will it be permanent, lasting as long as the life of the group, or will it be rotating, so that each student will experience what it means to be a leader?

Ideally, small groups should never have more than twelve or fifteen students per section. An ideal small group would contain only eight or ten. The level of interaction rises as the number of participants declines.

Individually directed study. The function of an individually directed study program is not to provide students with leisure time, but to provide them ample time for assuming a large portion of the responsibility for the management of their own learning. The time it takes to reach a conclusion from a scientific experiment will be different from the time it takes to write an acceptable essay. Furthermore, the time it takes to write an essay will in itself differ from time to time.

The kind of learning in which the student exercises the option of pursuing the course of study, the length of study, the depth of study, and the sequence is not an entirely novel proposition. As stated by Howard:

> Once competence has been demonstrated to the satisfaction of the teacher, the individual pupil or the learning team may (a) exercise an acceleration option, and proceed to another learning module, (b) exercise a depth option and pursue further teacher-planned work on the same or related topic, or (c) exercise a quest option. . . . The term continuous progress is usually used to designate this type of flexible curriculum.[5]

Sometimes the term is used differently by different organizations. For example, Gardner Swenson and his associates at the Institute for Development of Educational Activities coined the word "unipac." The Nova schools in Dade County, Florida, use the term "Learning Activities Packages." Some schools refer to it simply as "Individual Prescription Units." Whatever the label, the idea is that students can exercise an option in the choice of how they want to carry out their own learning progress.

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[5] Eugene R. Howard, "Staff Innovation for Innovative Teaching" (address presented before the opening session of the Los Angeles Regional TEPS Conference, Los Angeles, California, February 2, 1968).

Paradoxically, such released time from formal classroom instruction for more individually oriented student study can free both student and teacher for more contact in response to student needs. Granted that certain subjects have to be mastered, and that some students have difficulty mastering them, an efficient individually directed study program can aid a student by individualizing his opportunities for mastering common subject material, as well as allowing him time for more extensive practice or experience.

An individually directed study program might be an addition to the regular curriculum--as a teacher and a few students pursuing, with credit, a common interest in astronomy--or it might be a supplement to existing courses, as more practice reading in French.

Assignments might be random, or they might be projects to be completed on a semester basis. They might even be systematically scheduled. Even the meeting times could be determined by student responses to difficulties in research. And the material necessary for the development of the course could grow out of the purposes agreed upon by students and instructor.

The point once again is that an increasing number of students in secondary schools can rationally assume a more appreciable share of the responsibility of their peculiar talents and interests. Part of the school day should be their s in which they could pursue those interests and at their desired intensity, pace, and timing. The argument that the school can refuse the request of a student to spend time studying say, entomology, when it is not a part of the regular school curriculum can no longer be educationally defended.

For a school to maintain that it is meeting student needs while denying individual requests for learning advancement is to defend what is only hypothetically and not realistically true. Group needs are not individual needs, though all students need basic skills. The real question is what to do with students who acquire these basic skills earlier than others, and want to pursue their independent and unique growth patterns. Learning requests by high school students are usually not based on whimsy, but profound gropings for truth.

An example of the interaction of a learning activity and responsibility levels. Let us look at an example of a mode of instruction, the large group, and see how the three levels of responsibility interact with it.

Teaching responsibilities for instruction: large group. Since the large group is one of the most efficient methods of presenting common subject matter, generally to larger than traditional size numbers of students, this realm of responsibility belongs to the senior teacher.

Thus, he will become responsible for common presentations enriching each subject or group of subjects. He would, for example, be responsible for choosing what instructional alternatives should follow a lecture or movie on Chaucer's Canterbury Tales, and what students, of necessity, have to attend, and what students have the option of attending.

He would, in addition, have to make decisions about what kind of large group presentation would yield the best results at a given time. He might alternate between lectures, movies, multi-media approaches taught by teaching teams, panel discussions[6] composed either of students or teachers or a mixture of both, symposia, visiting community discussions led by resource personnel within the community, observation of events in the community, or participation in experiences relative to the goal of the particular instruction.

His choices would be based on the diagnostic information he received from students and in conference with other teachers. This kind of teacher-assisted diagnostic of all phases of the instructional program is not only supportive of the major responsibility of a particular teacher, but also is in reality supportive of current student achievements based on immediate feedback. Thus, sequencing of materials, in effect, is a response to student initiated academic needs.

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[6] Cf. Donald K. Sharpes, "Panel Discussions in English Classes," The Catholic Educator, June, 1962, pp. 925-27.

It is possible that the same senior teacher could be responsible for both the large group and individually directed study with the same students in the same subject area. Thus, he could coordinate his decision about what kind of large group to present, determining the kind of presentation (perhaps repetition is needed) from his perception of the study progress of students.

He has also to make decisions regarding the use and kind of supplementary media which students can use in the resource center, since he might also have major responsibility for these facilities. Tachistoscopes, miniature slide projectors, tape recorders, videotape recorders, records, and auxiliary personnel are all part of the arsenal the senior teacher has at his disposal to stimulate, enrich, and motivate students.

A subordinate responsibility for large group instruction will be handled by an associate teacher(s). The role of a subordinate responsibility is assistance in the operation of this phase of the program and advisory. Thus, if a lecture were chosen for a particular social studies class or classes, associate teachers would be present, and would observe student involvement. Associate teachers' observations would then be useful as feedback in evaluating the success of the large group, and in any modifications. The subordinate responsibility, therefore, is not only cooperation in making decisions, but also assistance in the practical operation.

The planning responsibility is a role that assists in the design of the operation of a phase of the program, in how the operation is evaluated, but does not actually participate in the operation. The role is totally advisory. For example, the master teacher has a planning responsibility for large group instruction and he would thus offer advice on how the curriculum--which he has some major responsibility for--might best be sequenced through large group instruction, or ways in which the large group might best be modified to adjust to individual needs. The planning responsibility is not a supplementary role or a mere addition to what the subordinate responsibility is. It is complementary to the other role positions, and is to be seen as a regular function and feature of the instruction program.

Further activities in the management of learning. The levels of responsibility for the large group instructional mode are indicative of how a variety of activities in the management of learning can be accommodated for by differing teacher responsibilities. The same procedure as outlined for the large group can be followed for other levels of responsibility and other levels of activities. Each activity in the management of learning model will be discussed as it becomes a part of the major responsibility of one of the teachers.

Submodels for each of the teachers follow, and with them, an explanation of how each responsibility is an integral part of the management of learning model.

Submodel 4--Assistant Teacher

The major responsibilities of the Assistant teacher are for small group instruction and the evaluation of intern or cadet teachers (see Submodel 4).

Though small group interaction is a powerful learning model, and might be more appropriately supervised by a more expeienced teacher, the less experienced teacher ought to assume major responsibility for one phase of the instructional program. This experience is meaningful because it places the aspiring career teacher directly in contact with individual learning problems without the strain of oversized classes. Second, since learning like a teacher or manager of the learning process is equally as important as learning like a student in a formal institution, the small group can serve as the environmental setting where the Assistant teacher can perfect his teaching skills in closer contact with students than is now possible in larger self-contained classrooms.

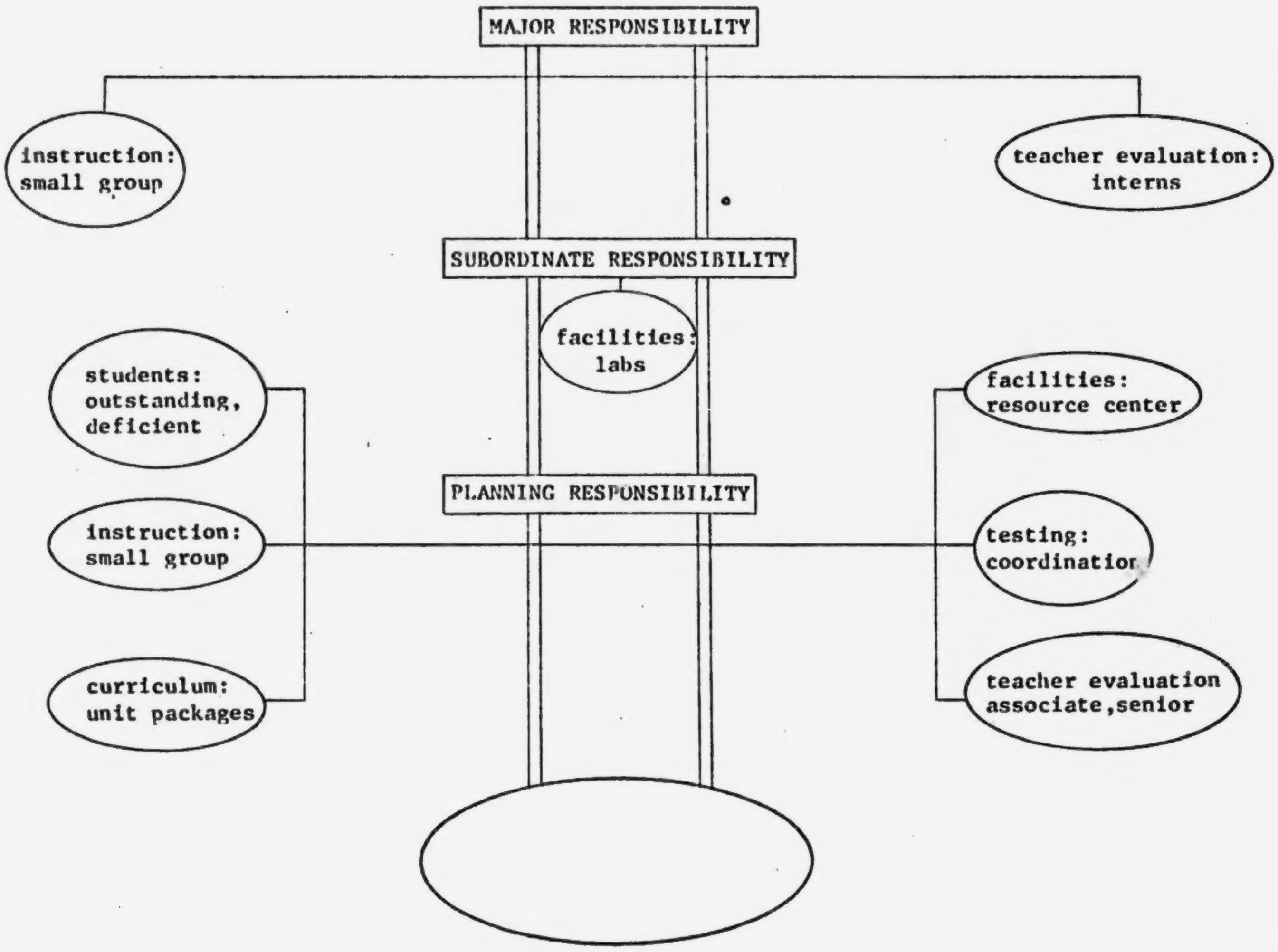
The second major responsibility of the Assistant teacher is the evaluation of intern or cadet teachers.

The subordinate responsibility of the Assistant teacher is help in the operation of the accessible laboratories. For example, an Assistant science teacher might be present as a resource person to assist students while they work experiments; or an Assistant business teacher might aid students while they practice on computing machines.

The myriad planning responsibilities are to enable the Assistant teacher to gain experience in as many phases of the school's program as

SUBMODEL 4

RESPONSIBILITY MODEL FOR THE ASSISTANT TEACHER


MAJOR RESPONSIBILITY
instruction: small group
teacher evaluation: interns
SUBORDINATE RESPONSIBILITY
facilities: labs
students: outstanding, deficient
facilities: resource center
PLANNING RESPONSIBILITY
instruction: small group
testing: coordination
curriculum: unit packages
teacher evaluation associate, senior

possible without the burden of assuming full responsibility. Thus, the Assistant teacher aids in the planning of individually directed study programs, the development of individual unit packages of performance criteria in his subject area specialty, the resource center, planning the coordination of the testing program throughout the school, the evaluation of Associate and Senior teacher, and responsibility for both outstanding and deficient students.

Because the scope of this study is limited to a focus on teacher responsibilities, the qualifications, specific expertise, and background must all be taken into account in a school's best use of an Assistant teacher, probably the majority of the less-experienced on the school staff. Bush and Allen comment on the plight that now traditionally confronts the beginning teacher:

> The need to achieve more intelligent induction of beginning teachers has long been recognized. . . . Very frequently the beginner faces a load assignment matching that of experienced teachers, a load often aggravated by some of the more difficult and shunned assignments. . . . The beginner has been often isolated from opportunities to communicate with experienced staff. . . .[7]

As a result, the present model of the Assistant Teacher is designed to meet the gap which now exists in faculty communication. Assistant teachers' planning responsibilities would, it is felt, substantially reduce the beginning teacher's entrance into the teaching profession (crucial now in the crisis of teacher turnover) and would

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[9] Bush and Allen, *op. cit.*, p. 43.

aid in establishing a strong rapport with the more experienced members of the staff. Increased communication without increased responsibility will give the inexperienced teacher vital encouragement at the inception of his career in teaching. He is certainly no less a professional staff member than the Master teacher.

Submodel 5--Associate Teacher

As the size of the planning responsibility decreases, the number of the major responsibilities increases, as shown in the responsibility model for the Associate teacher (Submodel 5). As a given teacher's competence increases, he assumes more responsibility for decision-making in the operation of the school's program.

Major responsibilities for the Associate teacher include the development of unit packages for the curriculum,[8] the evaluation of the Assistant teacher, coordination of the testing program, and the accessible laboratores. That the Associate teacher is responsible for both the coordination of testing and the development of unit packages for the curriculum is no accident, since both go hand-in-glove with the learning

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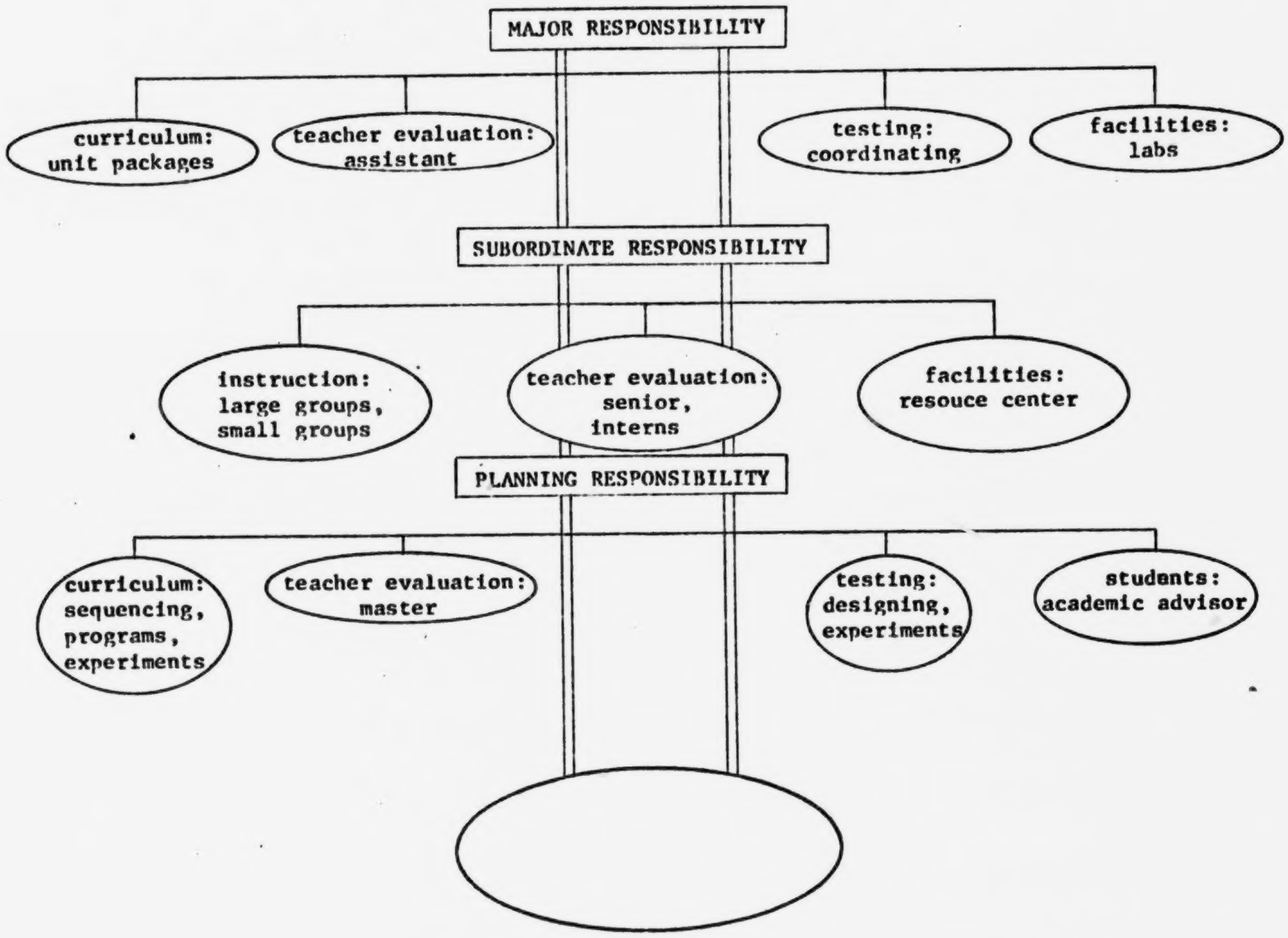
[8] The development of unit packages for the curriculum is not passing fancy, but an integral part of basing the curriculum on student performance. An excellent article advocating and illustrating its use is offered by Dr. Philip Kapfer, "An Instructional Management Strategy for Individualized Learning," Phi Delta Kappan, XLIX (January, 1968), 260-63. "One key to providing for individualized instruction is the preparation of individualized learning units or packages." Ibid., p. 260. See also the perceptive and humorous study by Robert F. Mager, Preparing Instructional Objectives (Palo Alto, California: Fearon, 1962).

SUBMODEL 5
RESPONSIBILITY MODEL FOR THE ASSOCIATE TEACHER


MAJOR RESPONSIBILITY
curriculum: unit packages
teacher evaluation: assistant
testing: coordinating
facilities: labs
SUBORDINATE RESPONSIBILITY
instruction: large groups, small groups
teacher evaluation: senior, interns
facilities: resouce center
PLANNING RESPONSIBILITY
curriculum: sequencing, programs, experiments
teacher evaluation: master
testing: designing, experiments
students: academic advisor

process and the on-going measurement of student progress.

It is necessary at this point to discuss the relation of the testing program to the curriculum and of the Associate teacher's unique part in bringing together these two disparate functions of the management of learning.

Testing and curriculum. "Specialization is doubtless inevitable in the educational system," Gagné wrote in 1965.[9] Countless specialists determine the structure of knowledge in school systems--administrative personnel, textbook writers and publishers, university teachers, and researchers, parents' groups, boards of education--to name but a few. It is obvious that no one teacher can be a specialist in every aspect of the educational process. But each step of advancement helps a teacher become more and more of a specialist in particular phases of learning.

Gagné describes six priority decisions to be made in the educational system ". . . to make possible efficient learning in the individual student."[10] Two of these priorities are important in our consideration of the major responsibility of the Associate teacher: assessment and the structure of knowledge to be learned. The Associate teacher has major responsibility for coordinating the testing program throughout the school.

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[9] Robert M. Gagné, The Conditions of Learning (New York: Holt, Rinehart and Winston, 1965), p. 264.

[10] Ibid., p. 263.

He must make provision for evaluation capabilities that students have learned. Thus, through properly conducted evaluation of the transfer of knowledge, the Associate teacher constitutes--through his other major responsibility of the development of unit packages for the curriculum--an important source of feedback to the learner of what is best to learn and how best to learn it.

The kind of assessment being discussed here is not the standardized testing program. Generally this is supervised by guidance personnel, who, for the purposes of this study, are considered administrative personnel. Rather, the assessment under discussion is that which is supposed to determine the immediate outcomes of learning.

Glaser makes the distinction between _criterion-referenced_ measures and _norm-referenced_ measures: "What I shall call criterion-referenced measures depend upon an absolute standard of quality, while what I term norm-referenced measures depend upon a relative standard."[11]

Criterion-referenced measures for Glaser are standards against which a student's behavior is measured. They are the proficiency levels he must attain. They do not refer to "end-of-course behavior," but are any point in the curriculum continuum where teachers wish to obtain information about the adequacy of a student's performance. These measures which are _norm-referenced_, however, are a student's performance relative to other students' performances. "On the other hand, achievement measures also convey information about the capability of a student compared with the capability of other students."[12]

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[11] Robert Glaser, "Instructional Technology and the Measurement of Learning Outcomes: Some Questions," _The American Psychologist_, XVIII (August, 1963), 519-21.

The Associate teacher must bring his faculties to bear on coordinating these aspects of the management of learning--the development of unit packages for the curriculum, and the coordinating of the testing program--which traditionally have been the separate responsibilities of personnel usually not even located in the school. The integration of these elements, however, does not make him an administrator. Though he does not have instruction as a major responsibility, he will be nonetheless responsible for students. But he will associate with them in a dimension that is interdepartmental and he will focus on continually updating specific curriculum units--an aspect that no "classroom" teacher is now traditionally responsible for. Moreover, a subordinate responsibility for him will call for him to assist in small group instruction with the Assistant teacher.

Accessible laboratories. The Associate teacher's major responsibility for the accessible labs would mean that he would be primarily responsible for making equipment and facilities available to students when they would be most appropriate in their learning sequence. For example, he would see to it that an art room would be open when students have the time to work on individual or group projects.

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[12] *Ibid.*, p. 519.

The primary idea of an accessible lab, as its name designates, is to free staff and students from artificial restrictions that have heretofore been constrictions on learning progress. They should be open to all students when they are available so as to promote self-instruction. Students can learn capably on their own if they are provided with instructional alternatives. Equipment and facilities, therefore, should be at their disposal throughout the school day, and should not be locked up just because "class" is not in session. The lab is not merely the science room, as Bush and Allen explain:

> Laboratory as here defined includes those physical facilities for which special equipment and tools are needed to enable students to work independently and in small groups and to practice skills, to experiment, and to apply ideas suggested in large-group instruction.[13]

Labs, then, might be physical education gyms, office machine centers, libraries, language labs, reading improvement rooms, programmed materials center, mechanical drawing centers, science labs, etc.

The Associate teacher might schedule students within and outside regular school hours, in or out of certain labs to work on special projects, or to join a particular group for a unit of work. These duties and administrative functions could all be part of his major responsibility for the accessible lab. Or he might assign Assistant teachers to work with special students on projects in the labs. He will monitor student progress and develop procedures for unsuccessful students that their rate of progress might be accelerated. He will keep track of supplies and equipment and likely establish priorities for requests for overflow demands on certain facilities. He will attempt to coordinate this phase of the program with the other phases of instruction.

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[13] Bush and Allen, _op_. _cit_., p. 37.

Subordinate responsibilities of the Associate teacher are small group instruction, resource centers, and assistance in the evaluation of Senior teachers and Cadet teachers.

Planning responsibilities include the sequencing, the revision of special programs and experiments in the curriculum, the evaluation of the Master teachers, the designing and experimenting of new test designs, and academic advisor to students.

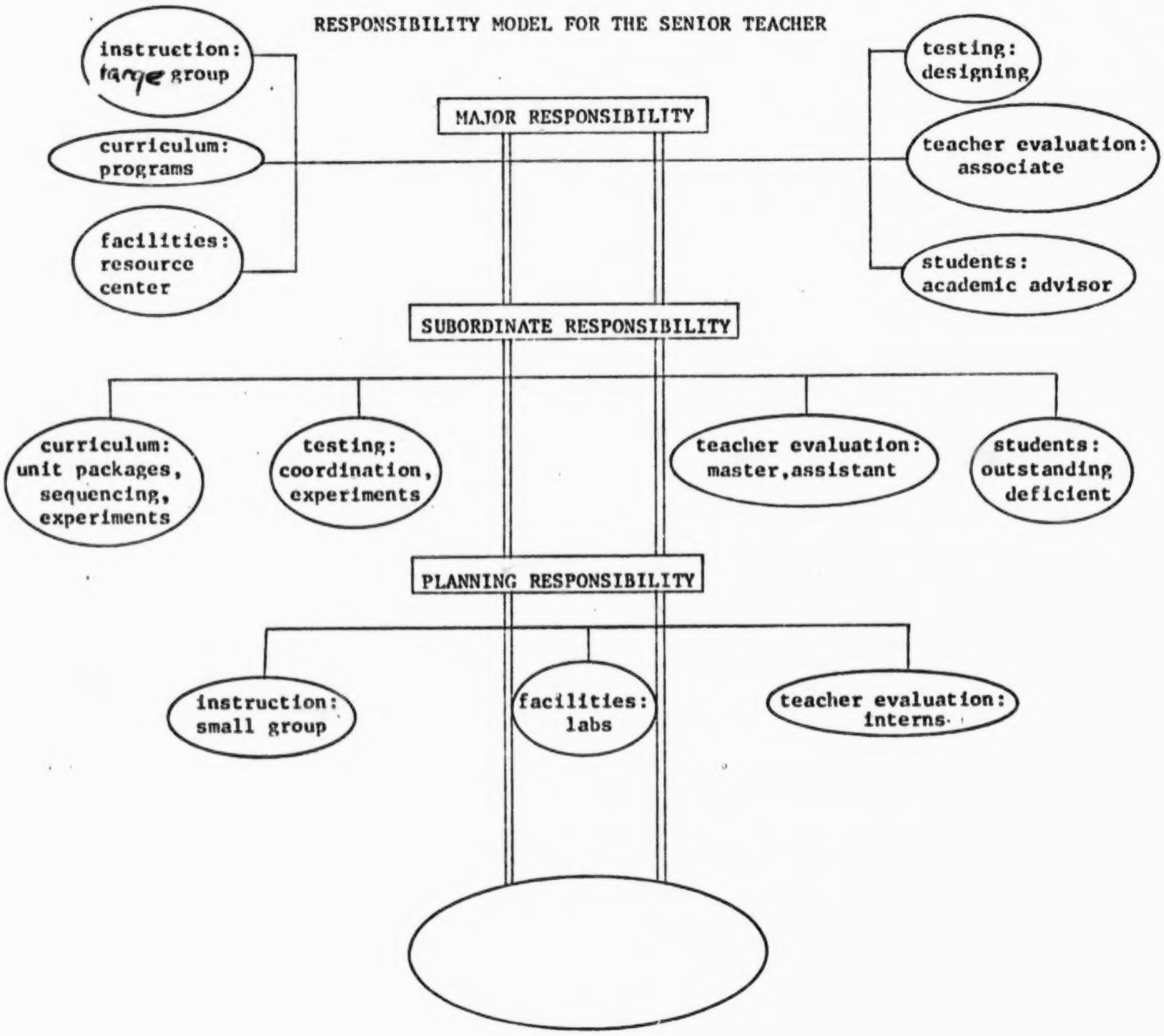
The responsibility model of the Associate teacher is a model of strength in the school's program. His involvement at all levels of interaction makes him a key figure in its success. The Associate teacher is not to be thought of simply as a link between the duties of the Assistant and Senior teacher. There is no overlapping of major responsibilities. The cooperation of all staff members is presumed at every level.

Submodel 6--Senior Teacher

The Senior teacher is one of the strongest instructional leaders in the school, for his obligation spans the large group and the individually directed study program as well as the academic advisor program. (See Submodel 6.)

SUBMODEL 6

RESPONSIBILITY MODEL FOR THE SENIOR TEACHER


instruction: large group
curriculum: programs
facilities: resource center
MAJOR RESPONSIBILITY
testing: designing
teacher evaluation: associate
students: academic advisor
SUBORDINATE RESPONSIBILITY
curriculum: unit packages, sequencing, experiments
testing: coordination, experiments
teacher evaluation: master, assistant
students: outstanding deficient
PLANNING RESPONSIBILITY
instruction: small group
facilities: labs
teacher evaluation: interns

A distinction is necessary at this point to clarify how individually directed study differs from the role of academic advisor. The rationale for individually directed study has already been suggested earlier in this chapter.

Academic advisor. An academic advisor is a counselor in academic affairs. Each teacher in the management of learning model is in some way responsible for advising students personally, especially those who share his interests whether or not they share his class. And, because a school has a variable course structure, teachers have more time to advise students on subject matter content, vocational possibilities after high school, college courses, how universities differ, etc. Note that an academic advisor does not enter into the realm of psychological advice, which is the particular domain of the guidance counselor. He only advises academically.

Traditionally, teachers have not had time during the school day--although some informal opportunities occasionally arise--to offer academic advice. This function has in recent years been assumed by the guidance counselor.[14] A proposed academic advisor program is an attempt to re-focus on the role of the teacher as an advisor to students. This reorientation of teacher roles is not an attempt to "pooh-pooh" or debunk the role of the guidance counselor or leader of pupil personnel services, but only to counteract what is detrimental to teaching. This idea is recent in the literature. "It has been seen that the constant drawing from teacher ranks to fill positions in personnel services and administration has a negative effect on the teaching profession."[15]

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[14] For a more comprehensive survey of the dangers of inadequate training and advice of vocational personnel and members of the guidance staff, see Aaron Cicourel and John I. Kitsuse, The Educational Decision-Makers (Indianapolis: Bobbs-Merrill, 1963).

Research indicates, moreover, that motivation in learning is complex, that teacher personality factors contribute largely to the effectiveness of the learner's intrinsic motives and attitudes. If the school environment is committed to enhancing cognitive motivation, then it must also be committed to the arousal of intrinsic motivation in the student. Consequently, the more interacting a teacher can generate personally, the more could he enhance cognitive processes; ". . . teachers who show personal interest and who avoid critical individual evaluation tend to favor the more creative products of divergent thinking."[16]

Bandura's ingenious work with models as a way of exemplifying imitative behavior illustrates the depth to which students can learn with teachers as exemplary models.[17] Encouragement of creativity through divergent thinking processes and the use of live models for identificatory learning are two reasons why a school committed to individual learning progress should regard the position of academic advisor as a primary step toward differentiation.

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[15] Gordon P. Liddle and Donald G. Ferguson, "Leadership for Guidance and Personnel Services," The Bulletin of the National Association of Secondary School Principals, LII (January, 1968), 4-10.

[16] Pauline S. Sears and Ernest R. Hilgard, "The Teacher's Role in the Motivation of the Learner," Theories of Learning and Instruction, Sixty-third Yearbook of the National Society for the Study of Education (NSSE) (Chicago: University of Chicago Press, 1964), p. 199.

Submodel 7--Master Teacher

If it was necessary to characterize the need for a Master teacher among the personnel of the secondary school, it would not be simply to provide a position among teachers comparable in pay to an administrative executive. Nor would it be simply to create a top echelon of teachers to prevail over and evaluate less effective teachers who happen to have had less formal training in education. The only necessity for differentiating levels of responsibility for teachers is because of student needs manifested in the management of learning. There are students in the secondary schools who are academically prepared for knowledge and experiences which some current classroom practices cannot develop. This is only an acknowledgement of individual differences. Likewise, there are students who find it difficult to maintain academic pace with the

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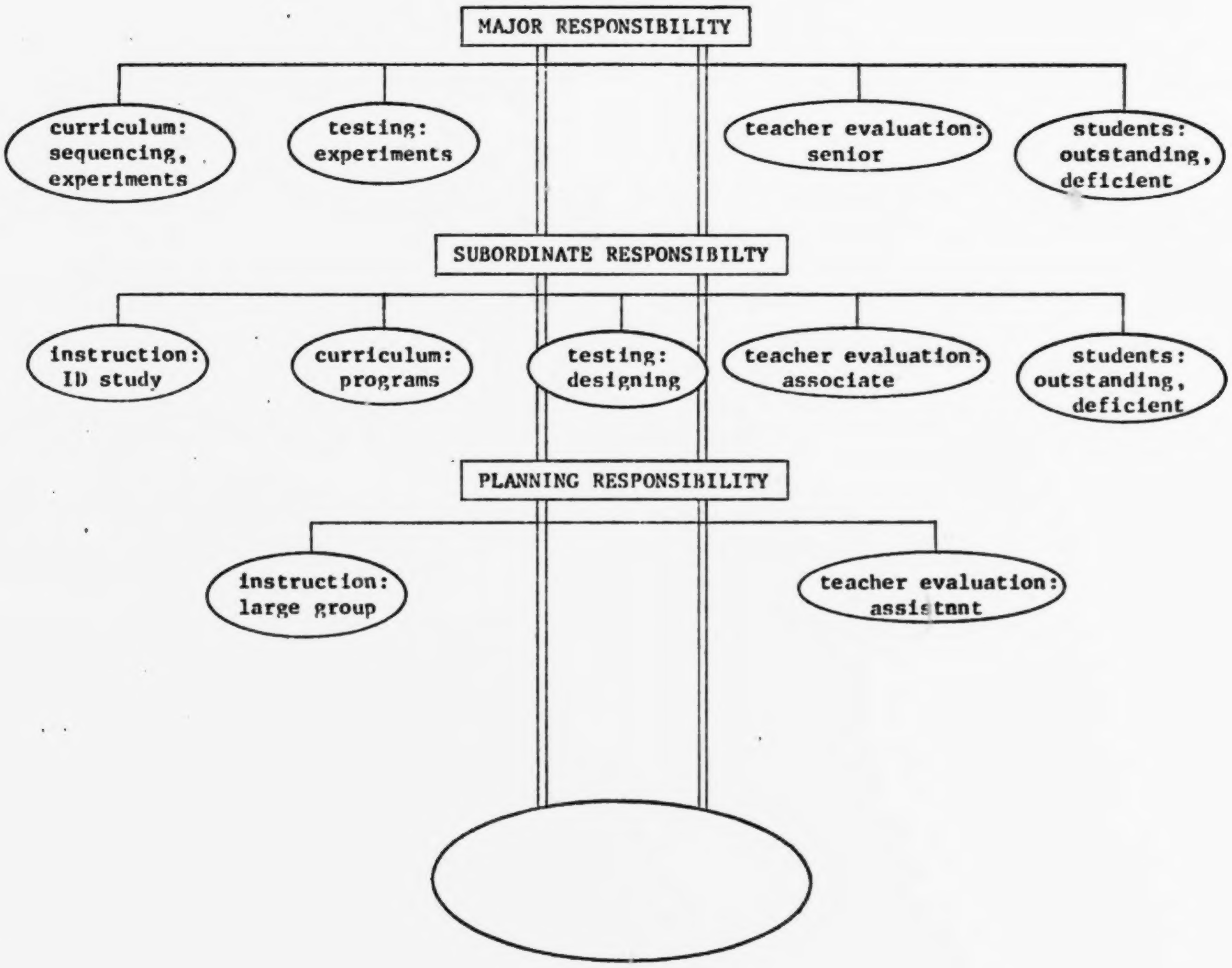
[17] Albert Bandura, _et al._, "A Comparative Test of the Status Envy, Social Power, and Secondary Reinforcement Theories of Identificatory Learning," _Journal of Abnormal and Social Psychology_, LXVII (June, 1963), 527-34. See also Albert Bandura, _et al._, "Modification of Self-imposed Delay of Reward Through Exposure to Live and Symbolic Models," _Journal of Personality and Social Psychology_, III (May, 1965), 698-705.

SUBMODEL 7

RESPONSIBILITY MODEL FOR THE MASTER TEACHER


MAJOR RESPONSIBILITY
curriculum: sequencing, experiments
testing: experiments
teacher evaluation: senior
students: outstanding, deficient
SUBORDINATE RESPONSIBILTY
instruction: ID study
curriculum: programs
testing: designing
teacher evaluation: associate
students: outstanding, deficient
PLANNING RESPONSIBILITY
instruction: large group
teacher evaluation: assistnnt

with the majority of students in any given class or in all classes. In short, some students succeed, or are ready to succeed, beyond the curriculum and instruction intentions of their individual teachers, and some students find themselves hopelessly or diminishingly behind the average requirements. Enter the Master teacher.

His primary task is the remediation of students deficient in certain subject matter disciplines, and the provision of programs and direction of students who are outstanding in certain subject matter disciplines. His responsibility, therefore, in the curriculum and instruction of the school is the individual student who is not, in the common educational parlance, "average" in ability.

Let us look at the Master teacher's responsibility for students academically handicapped from a student's viewpoint. Let us suppose a high school junior is receiving the following grades at the end of the first marking period:

English	D
American History	D
Mechanical Drawing	C
Math	D
Physical Education	B
Art II	B

Overall, if an administrator--or assuming a differentiated staff, a Master teacher--were to evaluate such a student's progress, it would be naive educationally to assume that a quantitative measure, such as grade point average, was a valid indicator of learning progress. The grade point average for this particular hypothetical student is 1.8, whatever that might mean.

What *is* clear is that the student is doing poorly in the so-called "academic" pursuits: English, history, and math. What *is not* clear is *why* he is doing poorly, or more specifically where his genuine learning potential lies. Decisions about the shape of a future curriculum for this particular student or those like him must come from an experienced educator.

Since the similarity of this particular pattern of proposed grades is oftentimes more typical, at least in its pattern, than not, it is imperative that an educator skilled in the nature of learning, the structure and sequence of the curriculum, states of readiness, methods of instruction, etc., be responsible for deciding how best to develop most uniquely this person's individuality. That person is the Master teacher.

Probable courses of action must lie in the remediation--or if that is not possible, at least the amelioration--of the root of the difficulty. The student might be doing poorly for any one or more reasons:

1. Deficiency in basic skills, e.g., reading and/or writing.
2. Inadequate home environment.
3. Nutritional deficiencies.
4. A lack of subject readiness.

5. More enthusiastic appreciation of one subject rather than another.

6. Misunderstandings with one or more teacher personalities.

The discovery of any one of these probable causes of slower academic progress, or the interaction of one or more of them, will dictate a different kind of decision by the Master teacher. The symptoms of lack of "academic" progress might not have an intellectual source. Affective and psychomotor domains will also affect changes in behavior.[18] The point is that someone on the staff, the Master teacher, will have the responsibility for holding periodic conferences with "slower" or non-achieving students to evaluate constantly their current scholastic status and to arrange for them new learning experiences.

Let us contrast this student with an outstanding high school junior. In contrast to the academically deficient student, he is receiving the following marks:

English	A
American Government	B+
Chemistry	A
French III	A
Band	A
Physical Education	B

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[18] David R. Krathwohl, Benjamin S. Bloom, and Bertram B. Masia, _Taxonomy of Educational Objectives, Handbook II: Affective Domain_ (New York: David McKay and Company, 1964).

Conferences with teachers only point up that he is "doing very well," has a high level, to use Bloom's terms, of knowledge of specifics, comprehension, application, analysis and synthesis in all subjects.[19] However, though he might have equal ability in all subjects, his high level of interest is only in languages. Providing he can maintain his performance in the other subjects, a Master teacher in that subject field might find ways to accommodate his high interest level with his high ability. The Master teacher's decision might simply be to free up portions of his scheduled time during the school day so that he can perform as he sees fit.

The emphasis of the Master teacher on the individual rather than on the group needs of students, so long characteristic of traditional secondary instruction, is an attempt to reduce scholastic group norms and to focus the efforts of the most qualified members of the staff on developing individual creative endeavors. Because of this emphasis the Master teacher's other major responsibilities center around curriculum sequencing and experimentation, and experimental test programs.

These responsibilities evolve from the widening interests of the superior and creative students, in addition to those who need practice in basic skills and remediation in learning experience. The Master teacher will, possibly within one subject area, have to devise a different method of evaluation for a student who has just learned a skill or technique, and one who is learning direct transfer of principles and generalizations. He will have to experiment with tests that can discriminate, for example, verbal facility and highly creative language potential.

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[19] Benjamin S. Bloom (ed.), Taxonomy of Educational Objectives, Handbook I: Cognitive Domain (New York: Longman, Green and Co., 1956).

A final major responsibility of the Master teacher this model proposes is the evaluation of the Senior teacher, which is a professional assessment of all the responsibilities of the Senior teacher.

The Master teacher's subordinate responsibilities outline how supportive are his obligations toward the learning vagaries and shifting needs of individual students, as well as the strong broad program of general education courses in language arts, history, science, and mathematics. He assists the Senior teacher in the operation of the individually directed study program, the designing of the testing program, the special programs of the curriculum, and the academic advisor program. Each of these functions of the school's learning arrangement broadens the potential of the school to provide the resources, both human and material, that individual students find appropriate at any given time in their learning growth.

Planning responsibilities of the Master teacher include large group instruction and the evaluation of the Assistant teacher.

The performance of the Master teacher must be thought of in a wholly new way than the role of a teacher. Traditionally, a teacher's subject matter competence or experience determined whether or not he was capable of handling 100 or more students a day. It would be difficult, perhaps even presumptuous at this juncture, to attempt to limn a "typical" school day for the Master teacher, or indeed any of the teacher models. It would not be an accumulation of responsibilities. It would not be a catalogue or list of kinds of activities. If a model has any merit, it is first of all in its direction of scope and its suggestibility, and secondly in its application. The levels of responsibility for the Master teacher are assumed to be true from felt student needs and secondary school provisions. The model for the Master teacher recognizes that a secondary school staff member is needed to accommodate those needs.

No teacher can be expected to be an expert evaluator, testing specialist, subject matter specialist, educational psychologist, curriculum and methodology expert, counselor, and researcher. Yet we ask no less now of our teachers.

The necessity of teacher differentiation is urgent. If teacher cooperation means something more than adjoining classrooms and occasional talks in the teachers' lounge, then it is urgent. If coordinated professional efforts mean something more than weekly conference planning sessions, then it is urgent. If coordination of school functions, such as testing and curriculum, experimentation, and individual study, instruction and facilities, means something more than the fact that someone, somewhere is looking after them, then it is urgent.

III. CONCLUSION

This study does not pretend that total implementation of the proposed model will automatically lead to school or district staffing success. Success under any conditions will be variable. For one educator the successful implementation of some model form of differentiated teaching personnel and some rearrangement of staffing procedures is sufficient. Even with this accomplishment, a second educator might feel satisfied to have introduced an "innovation" into his school or district and yet feel somehow that his staff does not appreciate the introduction of more competent teachers to the faculty. Still a third educator measures the strengths of his present system against those of a differentiated staff, finds the present structure wanting, checks his budgetary allotment, and decides that a reasonable facsimile of a differentiated staff is feasible. Thus, staffing success is varied and dependent in large measure upon the school's specified formal restrictions in budget, the flexibility of its design, and its interpretation of a staffing model.

However, an educator should not confuse a paper model with a successful operating program. Nor should he presume that administrative or teaching problems will vanish when he begins to operate with a differentiated staff. Quality education demands more than mere rearrangement of teaching positions or teaching roles or responsibilities. An educator may, in fact, discover that the need for enlightened and ingenious ways for students to learn will tax his ingenuity more than building staffing models. For unless the design he contemplates is indicative of a learning theory for students, problems such as school discipline, classroom control, details of scheduling, facilities, morale factors will always take precedence. It is only in how better to make or allow students to learn that the whole function of staff variability or differentiation has any significance.

CHAPTER V

RESULTS OF TESTING THE RATIONALE FOR THE MODEL

The findings reported in this Chapter uphold the hypotheses advanced in Chapter I that there is a priority of assumptions among certain educators about the organization of the development of a differentiated teaching staff model and its rationale for development.

I. ESTIMATING THE RELIABILITY OF MEASUREMENTS

It will be recalled from Chapter III that the estimators of reliability are the analysis of variance for ranked data, the coefficient of concordance, chi square, an analysis of mean ranks, and the index of average intercorrelation. All of these estimators are discussed in terms of their purpose and the findings of this study.

Assumptions of the Analysis of Variance for Ranked Data

Three assumptions are central to the use of analysis of variance for ranked data to measure the reactions of the panel of educational experts used in this study:

1. that the error of measurement is not correlated with the true score;
2. that the sample is a random sample from the population to which inferences are made; and
3. that the measuring instrument (the submodels) is a random

sample from a population of comparable instruments.[1]

Each of these assumptions has been met in this study. The inferences of the study are to the accessible population (all the respondents) and hypothetical populations like those used in the study. Further, the submodels are a random sample of an accessible population of models developed.

It is equally important to state what is not assumed, namely, normality of distribution. The analysis of variance for ranked data is not essentially a parametric test because no F is employed. Thus, as with other non-parametrics, it is often referred to as a "distribution-free" test. The assumption is that the population under consideration was not necessarily distributed in a normal way.[2]

Coefficient of Concordance

The coefficient of concordance is an index measuring the extent to which judges will agree in their choices.[3] Its use is in determining the agreement among several judges. It also provides a standard method of ordering submodels. It is particularly useful in this study because the objective order of the submodel entities is what is sought. Kendall's explanation is appropriate.

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[1] B. J. Winer, Statistical Principles in Educational Design (New York: McGraw Hill Book Company, 1962), p. 127.

[2] Sidney Siegel, Nonparametric Statistics for the Behavioral Sciences (New York: McGraw Hill Book Company, 1956), p. vii.

[3] Ibid., pp. 230-31.

> W measures, in a sense, the communality of judgements for the M observers. If they all agree, W = 1. If they differ very much among themselves the sums of ranks will be more or less equal, and consequently the sum of squares S becomes small compared with the maximum possible value, so that W is small. As W increases from 0 to 1 the deviations become "more different" and there is a greater measure of agreement in the rankings.[4]

Chi Square

The use of chi square statistic makes it possible to infer whether or not differences exist, other than those differences that result from variations in random sampling. Wert makes this clear.

> Chi square is a statistical technique which enables the investigator to evaluate the probability of obtaining differences between the actual and expected frequencies in the categories of one or more classifications as a result of sampling fluctuations.[5]

A chi square correlation, however, does not imply causation.

> . . . the establishment of a statistical association by means of the chi square test does not necessarily imply any causal relationship between the attributes being compared, but it does indicate that the reason for the association is worth investigating.[6]

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[4] Maurice Kendall, Rank Correlation Methods (London: Charles Griffin & Co., Ltd., 1948), p. 81.

[5] James E. Wert, Charles O. Neidt, and J. Stanley Ahmann, Statistical Methods in Educational and Psychological Research (New York: Appleton-Century-Crofts, 1954), p. 146.

[6] A. E. Maxwell, Analising Qualitative Data (London: Methuen & Co., Ltd., 1961), p. 19.

II. FINDINGS

Three hypotheses were listed in Chapter I. "It is hypothesized that the members in the sample will agree significantly that:

1. there is priority in the establishment of the submodels of the design;
2. priority is in the direction of the management of learning model, the rationale, rather than individual teacher models;
3. among individual teacher models that of the Master teacher is of highest priority."

All of these hypotheses were validated in this study.

Tables I and II summarize the data analyzed. Table I is the judges' rankings of the seven submodels, and Table II is the analysis of variance for ranked data using chi square. The horizontal plane in Table I exhibits the seven submodels, and the vertical column (that is, through 0) exhibits the fifteen judges who comprised the survey sample. The _total_ in Table I is the total number of rankings for any given submodel.

Mean Ranks

An inspection of the submodel totals in Table I reveals that the submodels for _Assumptions_ and _Management of Learning_ have the smaller means. The total for _Assumptions_ is twenty-eight (28), and the total for _Management of Learning_ is forty-eight (48). Notice that the total for the Assistant teacher submodel is eighty-five (85), and recall that the lower the total for a ranking, the higher the priority, and

TABLE I

JUDGES' RANKINGS OF SUBMODELS OF DIFFERENTIATED TEACHING PERSONNEL

Panel of Experts	SUBMODELS OF DIFFERENTIATED TEACHING PERSONNEL							
	Assumptions	Definitions	Management of Learning	Assistant Teacher	Associate Teacher	Senior Teacher	Master Teacher	Total
A	2	7	1	4	6	5	3	28
B	1	2	3	4	5	6	7	28
C	1	2	3	7	6	5	4	28
D	1	2	3	7	6	5	4	28
E	1	2	3	4	5	6	7	28
F	1	7	2	6	5	4	3	28
G	1	2	3	7	6	5	4	28
H	1	2	3	7	6	5	4	28
I	1	7	2	6	4	3	5	28
J	7	6	5	4	3	2	1	28
K	2	1	3	7	6	5	4	28
L	1	2	3	7	6	5	4	28
M	1	6	7	5	4	3	2	28
N	1	7	2	6	5	4	3	28
O	6	7	5	4	3	2	1	28
Total	28	62	48	85	76	65	56	420

TABLE II

ANALYSIS OF VARIANCE USING χ^2 FOR RANKED DATA FOR JUDGES' RANKING SUBMODELS TO A MODEL OF DIFFERENTIATED TEACHING PERSONNEL

Source of Variation			SS	df	χ^2_{ranks}
Between Judges			0	14	
Within Judges			420	90	
Between Submodels	102.66	6			22.03**
Residual	317.34	84			
Total			420	104	

$^{**}\chi^2_{.99}(6) = 16.8$

conversely.

The priority of the submodels, according to the mean ranks as measured by the judges, is as follows:

1. Assumptions
2. Management of Learning
3. Master teacher
4. Definitions
5. Senior teacher
6. Associate teacher
7. Assistant teacher.

Testing the hypotheses on mean ranks is a measure of the submodel rankings.[7] Analysis of means, therefore, confirms Hypothesis 1°, that there is priority in the submodels of the overall design. The direction of that priority, however, is stronger for Assumptions than for the Management of Learning. However, Hypothesis 2° is still upheld because the direction of the rankings is not in the direction of individual teacher models. Among teacher submodels, the direction of priority favors the Master teacher, confirming Hypothesis 3°.

Coefficient of Concordance

The results indicate that the coefficient of concordance or correlation ratio for the judges' rankings is $W = .244$. This figure is arrived at because:

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[7] Use of mean ranks ". . . gives a 'best' estimate in a certain sense associated with least squares." Kendall, *op. cit.*, p. 8.

$$W = \frac{\text{SS submodels}}{\text{SS total}}$$

To determine the significance of this relation the following formula is used.

$$\begin{aligned} \chi^2 &= k(N-1)\ W \\ &= 7(15-1)\ W \\ &= (98)(.244) \\ &= 23.912. \end{aligned}$$

Chi Square

The results of the judges' rankings of the submodels are reported in Table II, page 98. Winer's method for determining chi square for ranked data was used.[8]

The chi square, at the .01 confidence level for six degrees of freedom, is 16.8. The figure obtained in this study is 22.03, and consequently exceeds the .05 level set for confirmation of Hypothesis 1°, that there is priority among submodels of the design. And since the chi square exceeds the critical ratio or value, which at the .05 level is 12.59, the data tend to indicate that there is a difference between the mean ranks and the different submodels.

A table of critical values of chi square reveals that this figure is significant at .05 _alpha_ level with fourteen (14) degrees of freedom, but not at .01.

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[8] Winer, op. cit., pp. 136 ff.

Thus, it is probable the judges or observers applied essentially the same standard in ranking the submodels. This does not mean the rankings are "correct." They may very well be wrong with respect to some external criterion. But even if they were wrong, the significance showed that they were wrong in their use of a criterion, and that there is a high likelihood that the concordance is different from zero.

Average Intercorrelation

The average intercorrelation between rankings assigned by the judges, symbolized by $\bar{r}$, is .190. Since this statistic is a product-moment correlation, this indicates that the figure .190 is a correlation of rankings between judges. This correlation is determined by the formula,

$$\bar{r} = \frac{NW-1}{N-1}$$

and hence,

$$= \frac{15(.244)-1}{15-1}$$

$$= \frac{2.660}{14}$$

$$= .190$$

Eleven of the judges, for example, rank the _Assumptions_ submodel as their first choice. Yet there are radical departures. Two judges rank it as their second choice, one judge ranks it sixth, and still another seventh--the antithesis of the majority.

The Definitions submodel is still another index where the judges diverge drastically. Notice that although this submodel received the most second choices (seven), it also received the second most number of last choices (five sevens), second only to the Assistant teacher submodel. It even received one ranking of highest priority.

Even a cursory examination of Table I, page 97, of the judges' rankings tends to confirm the average intercorrelation statistic (.190) and the fact that the divergence of judges among themselves as to which submodels should receive priority is greater than their agreement.

Summary

Both the coefficient of concordance (W), which indicates the judges used the same criterion, and the average intercorrelation ratio ($\bar{r}$), which indicates their degree of divergence, depend on each other mathematically. The two indices together indicate some limited agreement in ranking. Hence, it might be conjectured that the judges are judging by the use of similar criteria.

An analysis of the three hypotheses of this study in relation to the findings will be appropriate.

Hypothesis 1°. The first hypothesis, that there is priority in the submodels, was validated by an analysis of mean ranks, and also by the chi square for analysis of variance for ranked data.

Hypothesis 2°. The second hypothesis, that the direction of the judges' priority was in the direction of the Management of Learning submodel rather than individual teacher models, was confirmed by an analysis of mean ranks. Inspection of mean ranks showed that the direction was primarily towards the Assumptions submodel.

Hypothesis 3°. The third hypothesis, that among the teacher submodels judges would rank the Master teacher highest in priority, was also confirmed by an analysis of mean ranks.

CHAPTER VI

SUMMARY, CONCLUSIONS, AND SUGGESTIONS FOR FURTHER RESEARCH

I. SUMMARY

The rationale for conceptualizing differentiated teaching personnel was discussed in Chapter I. Assumptions about designing a human organization were proposed, as were current differentiated staffing models. Current models, included in Chapter II, were based on organizational needs and present teaching practices.

Research tended to confirm the necessity of reorganizing the secondary school staff, and the creation of an alternate staff design built on a management of learning submodel was proposed as the main objective.

An analysis of why teachers were leaving the profession was presented in Chapter II. It was suggested that the establishment of a differentiated staff could possibly eliminate the sources of teacher turnover, and hence arrest the flow of competent teachers out of the profession.

Chapter III pointed out the importance of developing a model, the procedures in selection of the panel of experts, the necessity of testing the model, the statistics used, the pilot study, and limitations of procedures.

The model was presented in Chapter IV. The results of testing the rationale were presented in Chapter V.

II. CONCLUSIONS

Literature Conclusions

Several conclusions are evident from the research literature. The greatest sources of teacher dissatisfaction evidenced were salary inequities and lack of professional teaching advancement opportunities. The reconciliation of the need for advancement in teaching and the lack of such a comprehensive organizational design has been the major thrust of this study.

Second, an analysis of present alternatives to staffing indicated no differentiation of teaching responsibilities based on responsibility models. Rather, most models argued for a different approach to the differentiation of teaching responsibilities based on what teachers currently do. A main focus of this study has been to develop a model of teacher differentiation based on student learning needs.

Third, student learning needs were proposed as the basis for the model of this study because the literature seemed to indicate that variations in teaching effectiveness and teaching styles had an affect on student achievement.

Testing Conclusions

The specific hypotheses were to determine what concepts--that is, what rationale, what basis for development--should prevail in the development of a model of teacher differentiation. Accordingly, testing the model was a way of testing the judgments certain educators made about which concepts, of those used in developing models of staff organization, should receive priority. The priority concept was used to establish validity for the assumption of student learning needs as the rationale.

A selected panel of educators responded to a ranking instrument devised to measure priorities in submodels within the differentiated staff model. They concluded that there was priority among the submodels. Their consensus was to the degree which they thought a submodel should have precedence over others. Their rankings substantiated that, not only was their priority among the submodels, but that priority was with the learning and not the teaching models, and that among teacher submodels that of the Master teacher was of highest priority. The hypotheses were all substantiated.

Summary Conclusions

1. There is a need for differentiation of teaching responsibilities.
2. There is a need for the development of a model prior to the implementation of a differentiated teaching staff.
3. There is a need for assumptions of models prior to their development.
4. There is a need for models based on student learning needs and not just current teaching responsibilities.

5. There is a possible need in the secondary schools for a person who has responsibilities similar to those of the Master teacher in this study.
6. There is a need for replication of this study to survey a larger and more diverse population.

Implications

This study seemed to demonstrate that, for any future consideration of differentiated staffing, the primary concern must be the learning needs of students and not staffing patterns per se. Although the model does not solve personnel problems, it does provide information upon which to base decisions about staff utilization.

Most staff models in present secondary schools are based on subject matter teaching needs, student-teacher ratios, district instructional budgets, etc. Even most contemporary models of differentiated personnel are based on teaching responsibilities, catalogues of teacher duties and functions, or models of proposed salary schedules.

The result of this research tends to indicate that certain educators believe that it is more important to consider assumptions and student learning needs as a basis for differentiated staff, rather than staff patterns in themselves. The results tend to show primacy not just ancillary consideration. Their rankings on items which included both differentiated submodels of teachers and submodels of assumptions, definitions, and management of learning are in the direction of the latter three.

This seems to indicate that future staff models might have to be conceptualized, formulated, and implemented from what student needs in a given school are. For practical purposes this would also seem to indicate that, granted student learning needs change--for individuals over time, and for differences over individuals--new staffing patterns will have to emerge to adapt to new student needs as they arise.

The implication of this concept is that there can be no uniform staffing pattern, at any given point in time, or for any given secondary school.

Recommendation

The primary recommendation is that the method of approach developed in this study be validated by application to actual personnel teaching in a secondary school.

III. SUGGESTIONS FOR FURTHER RESEARCH

The list of suggestions proposed is not a catalogue of results or even recommendations. It is procedures suggested for consideration based on the reality of differentiation among teachers.

1. A model of administrative personnel should be developed in order to differentiate all levels of responsibility throughout the secondary school.
2. Models of teacher training institutions have to be likewise developed to cope with the problem of differentiated teachers in the schools. New methods of training teachers

for differing kinds of responsibility will have to be devised.

3. Models of curriculum planning will also have to be developed in light of changing staff designs.
4. Analyses of morale and motivational factors will have to be carried out given the effects of competition among teachers for higher paying positions or responsibility.
5. Samples of reactions should be studied about differentiation among teachers, teacher union personnel, state legislators, and taxpayers to measure the long-range effects on public education.
6. Models are needed for in-service training programs to acquaint teachers with differing roles. Sensitivity programs should be initiated to promote teachers' awareness of student and other teacher needs.
7. Program Evaluation and Review Techniques (PERT) will have to be generated as well as time-line graphs for pinpointing the decisions necessary for schools or districts to proceed with implementation. These should show the time necessary for developmental stages of planning.
8. Cost analysis techniques will have to be projected to determine prototypes of capital outlay and probable expenditures of a school or district required for implementation.

This study has shown the value and feasibility of model-building and the importance of a rationale in the development of models.[1] The somewhat hypothetical nature of the development does not preclude incorporation of the derived method as a standard tool for the teaching profession. Considering the growing magnitude and the diverse conditions of the teaching profession, the slightest improvement in personnel strategy and management can have tremendous impact on career morale and teaching incentive.

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[1] "A working model is not something to be copied; it is to afford a demonstration of the feasibility of the principle, and of the methods which make it feasible." John Dewey, The School and Society (Chicago: The University of Chicago Press, 1902), p. 94.

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APPENDICES

APPENDIX A: PACKET SENT TO PANEL

APPENDIX B: RESPONDENTS

APPENDIX C: RESPONSE SHEET USED IN THE PILOT STUDY

3

APPENDIX A

The following Appendix contains a copy of the response sheet sent to the panel of educational experts, and copies of the packet of submodels sent for them to rank.

PLEASE SEND BACK ONLY THIS RESPONSE PAGE IN THE ENCLOSED ENVELOPE

DIRECTIONS

Enclosed in this packet are seven (7) items I would like you to react to and rank in order of priority. These items are clearly labeled at the top of each enclosed page. They are: 1) Assumptions, 2) Definitions of Terms in the Management of Learning, 3) Illustration of the Varieties of Activities and Levels of Responsibility in the Management of Learning, 4) Responsibility Model for the Assistant Teacher, 5) Responsibility Model for the Associate Teacher, 6) Responsibility Model for the Senior Teacher, 7) Responsibility Model for the Master Teacher.

Please rank these items in the order in which you think they are the most important for a conceptual understanding of differentiated teaching personnel. Place the number 1 by the item you think is most important, the number 2 by the second most important, and so on through number 7, the one you think the least important.

_____ Assumptions

_____ Definitions of Terms in the Management of Learning

_____ Illustration of the Varieties of Activities and Levels of Responsibility in the Management of Learning

_____ Responsibility Model for the Assistant Teacher

_____ Responsibility Model for the Associate Teacher

_____ Responsibility Model for the Senior Teacher

_____ Responsibility Model for the Master Teacher

****

These directions were recently part of an experiment. The pilot study, conducted with undergraduate education majors in my classes, predicted that students would tend to understand clearly the nature of the directions, whether or not they understood the concepts. The results, from a randomly chosen sample, for a one-tailed test, were significant in the hypothesized direction at both the .05 and .01 alpha levels.

PLEASE SEND BACK ONLY THIS RESPONSE PAGE IN THE ENCLOSED ENVELOPE

Assumptions

Several assumptions undergird the structure of the instructional program in this model. Some of these pressing educational assumptions are thought of as innovative, yet few question their educational validity.

1. A school should have a flexible course structure that provides for the expansion or deletion of the growing volume of course content. Teaching strategies adapted to the demands of specific course material decided by teams of instructional personnel are definitely more advantageous than strategies devised by teachers acting singly. It is precisely within the instructional phase of the school's total program that there must be more efficient assignment of teaching responsibilities.
2. Course sequencing allows students to build and maintain skills by studying in each major curriculum area each year for amounts of time and in class situations compatible with their individual interests and abilities. Such sequencing cannot be accomplished by individual teachers acting separately and without knowledge of what other teachers are doing in other subjects.
3. Class meetings should be of a duration appropriate to their specific purpose, and student groups should be individually tailored to the aims of a given instructional lesson.
4. The instructional program should include division of course content into elements that can be transmitted to entire enrollments, to

identifiable alternative groups, and to individuals as occasions demand.

5. Advisory relationships should exist between teachers and students based on educational needs, not just administrative or organizational considerations.
6. Instructional modes should have provisions for large groups, small groups, and individually directed study programs.[1]

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[1] This assumption is found elsewhere. See Bush and Allen, A New Design for High School Education (New York: McGraw Hill, 1964), p. 8. "Each subject, when properly taught, will include four basic types of instruction: a) Independent and individual study b) Small group instruction c) Laboratory instruction d) Large group instruction." This study retains the terms with some modification and distinction. Large and small groups are means of instruction, and do not pertain to the relative sizes of student groups. Independent and individual study will, in this study, be known as individually directed study to emphasize that students are not completely independent in what they do or the manner in which they do it. Laboratory instruction is not, strictly speaking, felt to be a separate kind of instruction. What learning that does go on in the laboratory might in one instance be individual scientific experimentation, small group experimentation, or even large group design, if it is teacher dominated. So although there might be some ambiguity in the terms large and small group, since size is not the issue, the terms are preserved to show continuity with previously established literature.

Definitions of Terms in the Management of Learning

1. Instructional Mode = the interaction which exists between the curriculum, the learner, and the teacher(s).

2. Curriculum = "planned courses, subjects, and activities which are designed to carry out the purposes of the school."[1]

3. Facilities = that which promotes the ease of operation, or courses of study in the educational program.

   A) Resource Center: a facility which provides necessary materials for specialized study, either private or group.

   B) Accessible Labs: facilities which provide special equipment or resources for pursuit of experimentation, research, or practice.

4. Testing = comparative conditions designed to measure learning progress.

5. Teacher Evaluation = the comparative rating of one person by another.

6. Student Responsibility = kinds of students assigned to different levels of teachers.

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[1] Leroy H. Griffith, Nelson L. Haggerson, Delbert Weber, Secondary Education Today (New York: David McKay, 1967), p. 68.

ILLUSTRATION OF THE VARIETIES OF ACTIVITIES AND LEVELS OF RESPONSIBILITY IN THE MANAGEMENT OF LEARNING

Activities	Responsibility		
	Major	Subordinate	Planning
Instructional Mode:			
large group	senior	associate	master
small group	assistant	associate	senior
individually directed study	senior	master	assistant
Curriculum:			
unit packages	associate	senior	assistant
sequencing	master	senior	associate
programs	senior	master	associate
experiments	master	senior	associate
Facilities:			
resource center	senior	associate	assistant
accessible labs	associate	assistant	senior
Testing:			
coordinating	associate	senior	assistant
designing	senior	master	associate
experimenting	master	senior	associate
Teacher Evaluation:			
assistant	associate	senior	master
associate	senior	master	assistant
senior	master	associate	assistant
master	principal	senior	associate
interns/cadets	assistant	associate	senior
Students:			
academic advisor	senior	master	associate
outstanding	master	senior	assistant
deficient	master	senior	assistant

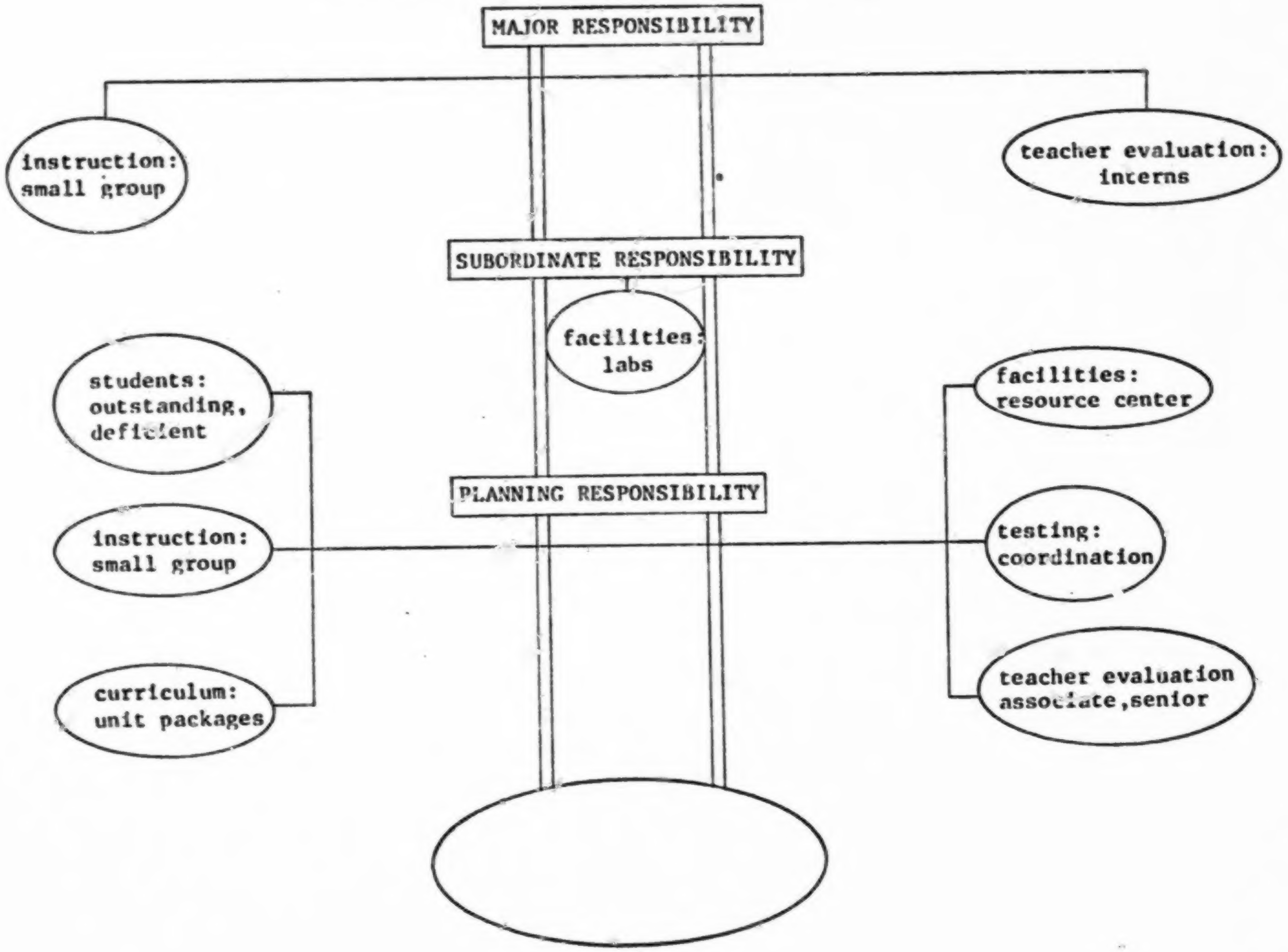
The vertical dimension illustrates the kinds and varieties of activities within the school, and the horizontal dimension illustrates the levels of authority and responsibility. The varieties of activities are not meant to be complete, but only illustrative.

Major responsibility--responsibility for the operation, continuance and evaluation.

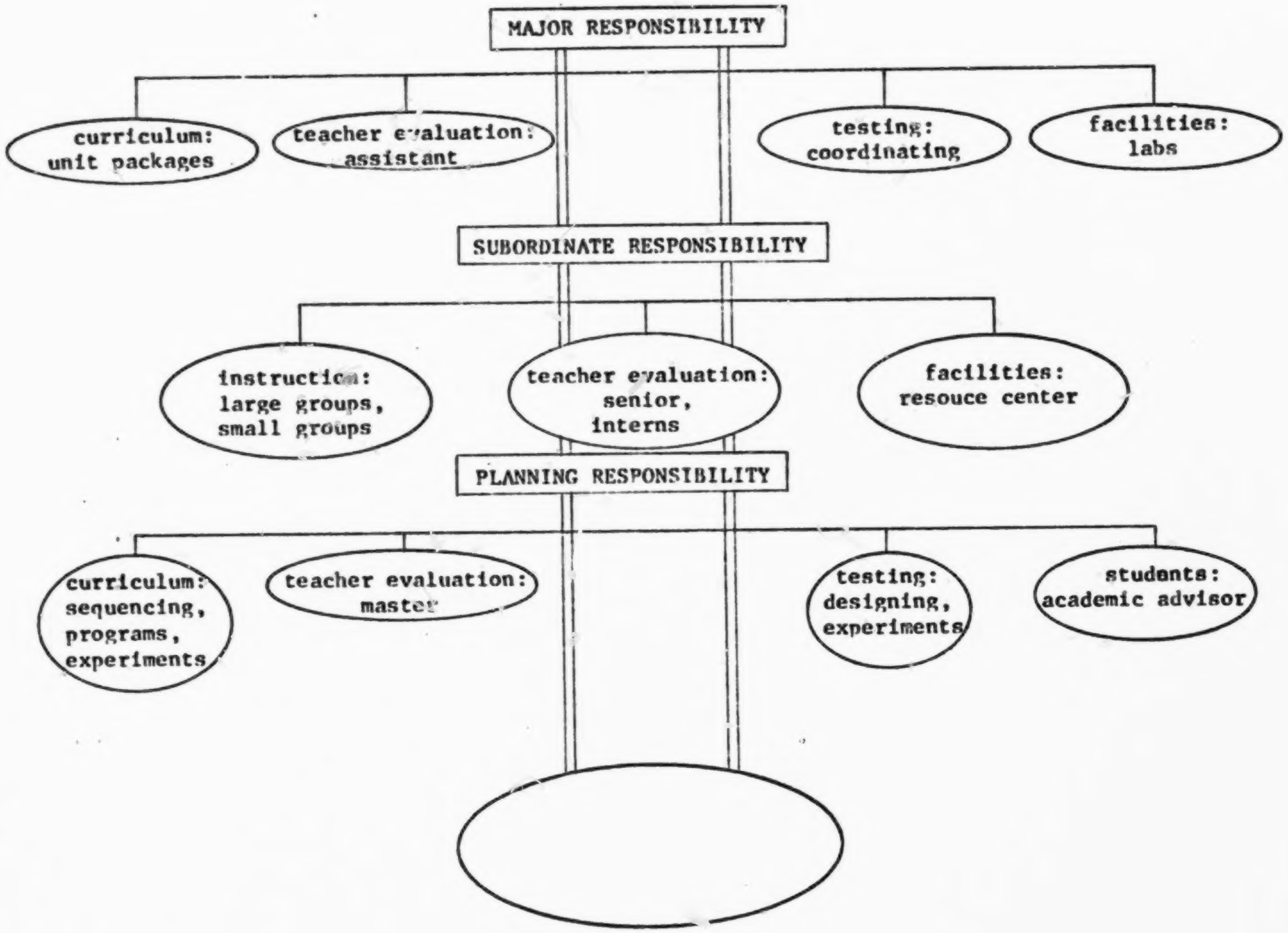
Subordinate responsibility--assistance in the actual operation.

Planning responsibility--assistance in the design of the operation and its evaluation.

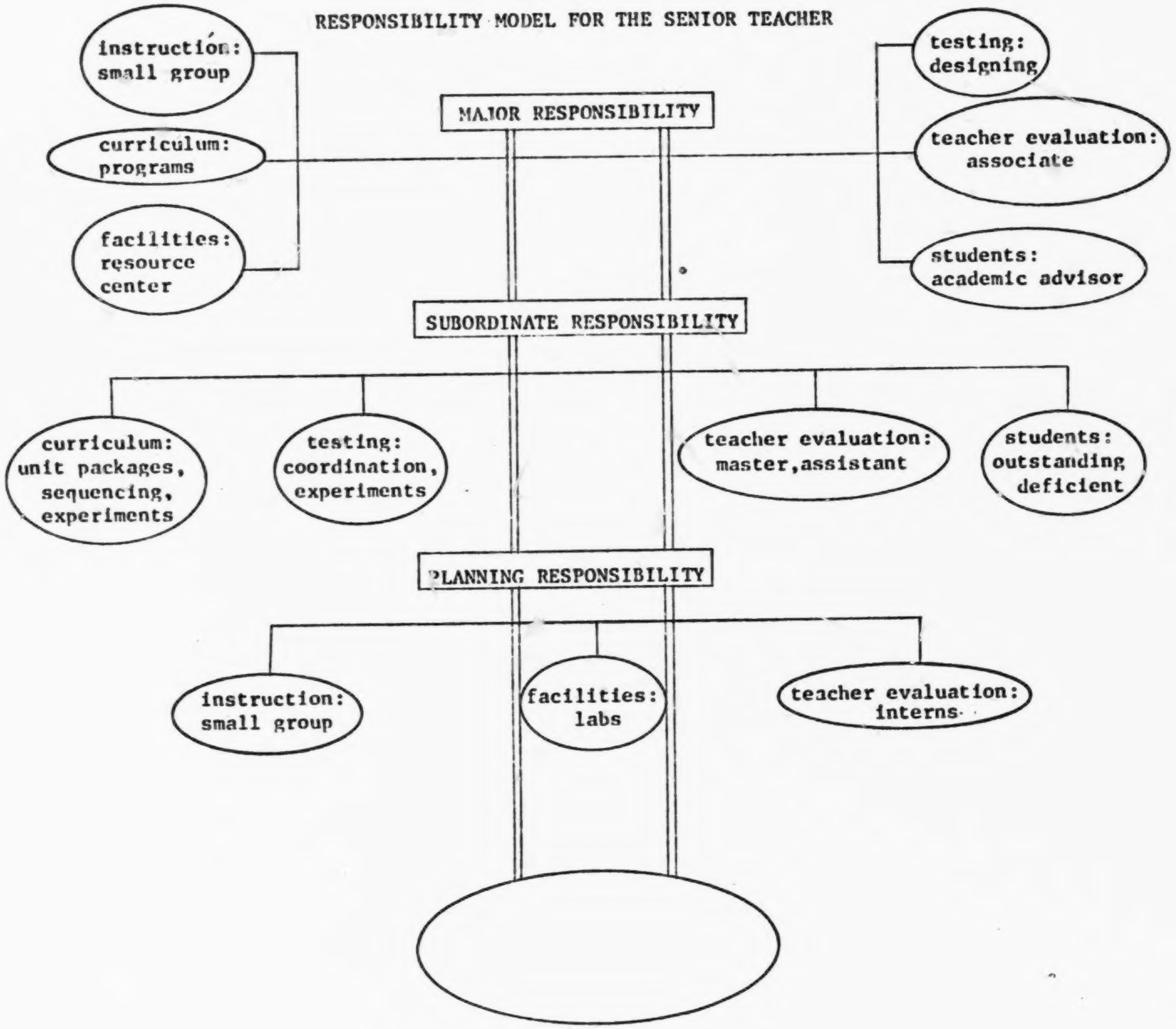
RESPONSIBILITY MODEL FOR THE ASSISTANT TEACHER


MAJOR RESPONSIBILITY
instruction: small group
teacher evaluation: interns
SUBORDINATE RESPONSIBILITY
facilities: labs
students: outstanding, deficient
facilities: resource center
PLANNING RESPONSIBILITY
instruction: small group
testing: coordination
curriculum: unit packages
teacher evaluation associate, senior

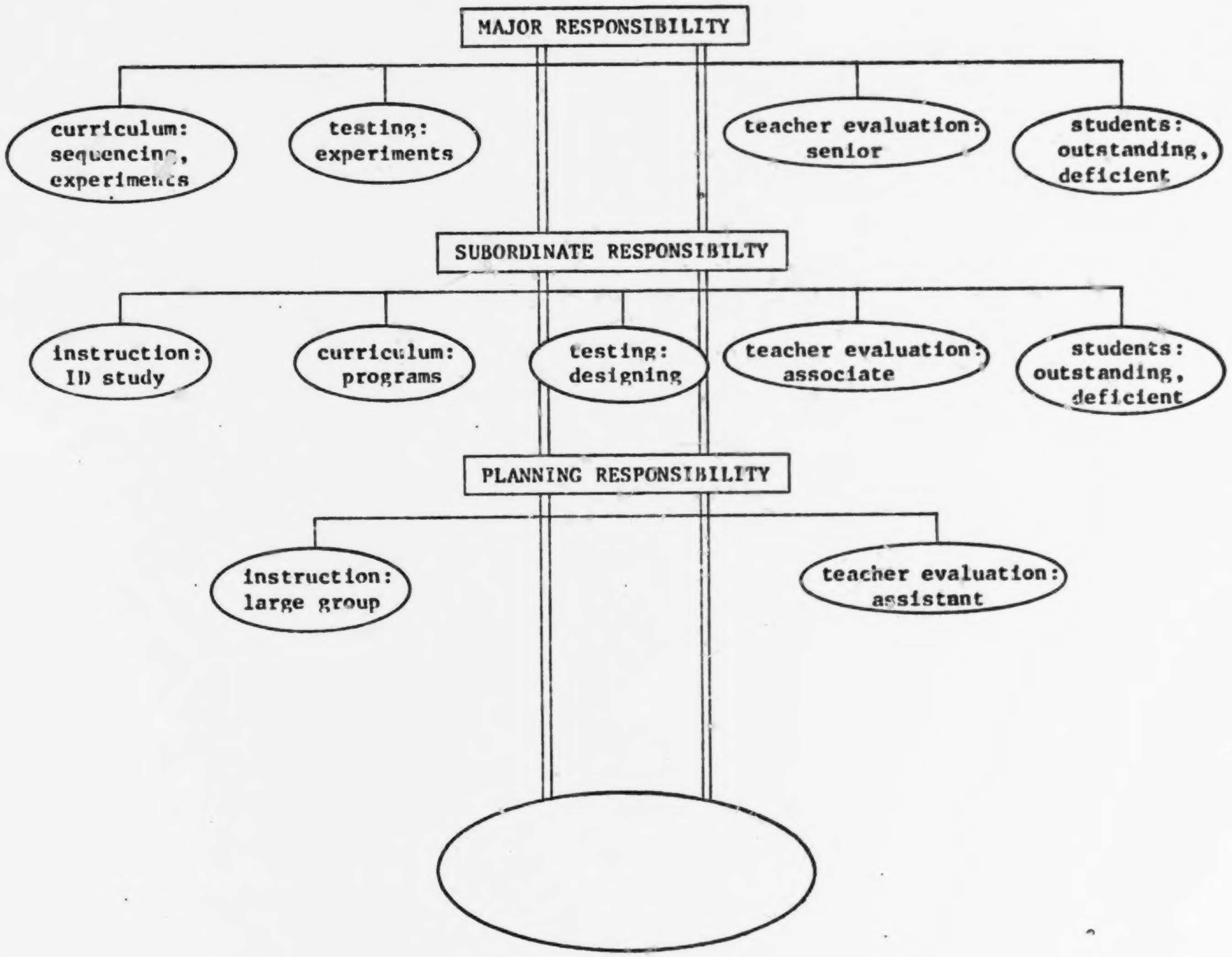
RESPONSIBILITY MODEL FOR THE ASSOCIATE TEACHER


MAJOR RESPONSIBILITY
curriculum: unit packages
teacher evaluation: assistant
testing: coordinating
facilities: labs
SUBORDINATE RESPONSIBILITY
instruction: large groups, small groups
teacher evaluation: senior, interns
facilities: resouce center
PLANNING RESPONSIBILITY
curriculum: sequencing, programs, experiments
teacher evaluation: master
testing: designing, experiments
students: academic advisor

RESPONSIBILITY MODEL FOR THE SENIOR TEACHER


instruction: small group
curriculum: programs
facilities: resource center
MAJOR RESPONSIBILITY
testing: designing
teacher evaluation: associate
students: academic advisor
SUBORDINATE RESPONSIBILITY
curriculum: unit packages, sequencing, experiments
testing: coordination, experiments
teacher evaluation: master, assistant
students: outstanding deficient
PLANNING RESPONSIBILITY
instruction: small group
facilities: labs
teacher evaluation: interns

RESPONSIBILITY MODEL FOR THE MASTER TEACHER


MAJOR RESPONSIBILITY
curriculum: sequencing, experiments
testing: experiments
teacher evaluation: senior
students: outstanding, deficient
SUBORDINATE RESPONSIBILTY
instruction: ID study
curriculum: programs
testing: designing
teacher evaluation: associate
students: outstanding, deficient
PLANNING RESPONSIBILITY
instruction: large group
teacher evaluation: assistant

APPENDIX B

RESPONDENTS

The following persons responded to the schematic example of the models included in Appendix A:

Dwight W. Allen, Dean, School of Education,
University of Massachusetts

Richard Clark, Supervisor of Teacher Interns,
Stanford University

Don Davies, Director, Bureau of Educational Personnel
Development, U. S. Office of Education

Don Delay, Research Associate, McConnell & Associates,
Palo Alto, California

Thorwald Esbensen, Associate Superintendent,
Duluth Public Schools, Duluth, Minnesota

Stanley Ikenberry, Dean, School of Education,
University of West Virginia

Ray Johnson, Research Assistant, Director of Vocational
Education Project, Stanford University

Olan Knight, Research Assistant, Stanford University

Richard Krebs, Professor of Education, University of Arizona

Robert Lundgren, Research Assistant, Stanford University

Michael Lyons, Research Assistant, Stanford University

Jack McLeod, Research Associate, Stanford University

James Olivero, formerly Assistant Secretary, National Commission
Teacher Evaluation and Professional Standards (TEPS),
National Education Association, now
Director, Southwest Cooperative Educational Laboratory,
Albuquerque, New Mexico

Malcolm Provus, Director of Research,
Pittsburgh Public Schools, and
Professor of Education,
University of Pittsburgh

M. Jack Rand, Superintendent of Schools,
Temple City Unified School District,
Temple City, California

Scott Thompson, Principal, Evanston Township
High School, Evanston, Illinois

APPENDIX C

Response Sheet used in the Pilot Study to test the reliability of the written directions sent to respondents of the differentiated staff model.

PLEASE READ CAREFULLY

PLEASE DO NOT ASK QUESTIONS

PLEASE MARK ONLY AT BOTTOM OF PAGE

I am conducting an experiment. I am going to test with you how clearly my written directions are to those participating on a panel. What you are going to react to is the clarity of my directions, not to what is to be understood. You do not have the enclosures the panel will have.

DIRECTIONS:

"Enclosed are seven (7) items I would like you to react to and rank in order of priority. These items are clearly labeled at the top of each page. They are: 1) Assumptions 2) Definitions of Terms in the Management of Learning 3) Illustration of the Varieties of Activities and Levels of Responsibility in the Management of Learning 4) Responsibility Model for the Assistant Teacher 5) Responsibility Model for the Associate Teacher 6) Responsibility Model for the Senior Teacher 7) Responsibility Model for the Master Teacher. These seven (7) items are listed again below. Please rank them in the order in which you think they are the most important for a conceptual understanding of differentiated teaching personnel. Place the number 1 by the item you think is most important, the number 2 by the second most important, and so on through number 7, the one you think the least important.

_____ Responsibility Model for the Associate Teacher
_____ Assumptions
_____ Responsibility Model for the Senior Teacher
_____ Definitions of Terms in the Management of Learning
_____ Illustration of the Varieties of Activities and Level
of Responsibility in the Management of Learning
_____ Responsibility Model for the Assistant Teacher
_____ Responsibility Model for the Master Teacher"

Let us prescind from whether or not you understand the concepts or have the ability to make a competent judgment about a proposed plan for teacher re-organization. So whether or not you understand the concepts presented, please react to the nature of directions by placing a check on how well you understand what you are supposed to do.

_____ very clear _____ clear _____ somewhat difficult to understand _____ very difficult to understand _____not clear at all

BIOGRAPHICAL SKETCH

Donald Kenneth Sharpes was born Donald James McAulay in Yakima, Washington, on November 16, 1934. He attended several elementary schools during World War II. He graduated from Marquette High School in Yakima in 1953 and entered the Order of the Society of Jesus (Jesuits). He received an A.B. in Honors Classical from Gonzaga University in 1959 and an M.A. in English Literature in 1961. He taught English and was chairman of the department at Gonzaga Preparatory School from 1960 to 1963. He was President of the Spokane Area Council of English Teachers in 1962. He left study for the priesthood in 1963, and spent 1964 to 1966 in Japan as a teacher and administrator with the Department of Defense overseas schools. He received a Superior Performance Award from the Department of the Air Force on completion of that tour. He entered graduate school at Stanford University in 1966 and was a research assistant and consultant in computer-based modular scheduling. He received an M.A. from Stanford in 1968. He had also done graduate study at the Universities of Washington, Santa Clara, and Southern California. As a Faculty Associate at Arizona State University, he taught in the Department of Educational Foundations while completing requirements for a doctoral in secondary education. He and his wife Linda are the parents of Mike and Mary.